

Chemical Week—

July 2, 1955

Price 35 cents



► Automation is okay with major chemical labor unions—as long as workers share in gains . . . p. 22

Push-button pancakes augur trend toward aerosol-dispensed foods; problem: safe propellents . . p. 38

What keeps a salesman in there pitching? New study enables sales managers to find out p. 44

All sections of the country sing the same tune: firm, stable markets throughout '55 p. 55

► Du Pont's Mikita seeks chemical answer to preignition—bigger problem now than knock . . p. 58



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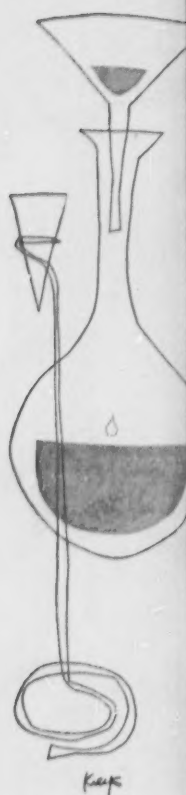
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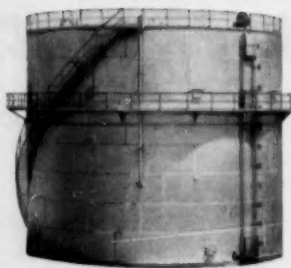


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Chemical Week

Volume 77

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OPINION

Or Whose?

TO THE EDITOR: . . . In reading my June 11 copy of your magazine at my laboratory this morning, I was surprised to find that you fell short of your usual high standard of giving all the pertinent facts in any development on which you report . . .

I refer to page 101 . . . the picture used in connection with report on Hercules' dicumyl peroxide . . . Three men appear in the picture—yet you mention only two . . . Hercules' Willis and Amberg. . .

Is the handsome young man on the right Hercules' or whose? . . .

R. C. HAVERSON
Consulting Chemist
New Rochelle, N.Y.

The bystander: Hercules' Harold Boardman.—Ed.

Starting Salaries

TO THE EDITOR: . . . Excerpts of your news article dealing with the recruitment of chemists and chemical engineers and starting salary ranges (June 11) were discussed at a meeting of our Industrial Relations Committee—membership of which includes a number of men who have charge of college recruitment activities for their respective companies.

These men questioned your statement: "Ph.D. candidates are immeasurably harder to catalog, but on the average (in chemical engineering) candidates are being offered \$700-900/month as starting salary . . ."

I wonder if you would be good enough to clarify . . .

M. F. CRASS
Secretary

Manufacturing Chemists' Assn., Inc.
Washington, D.C.

TO THE EDITOR: I have read with much interest your news article on the technical manpower situation "Situation Cloudy; Outlook Unsure" (June 11). We feel that you have reported the situation very accurately. Our own situation confirms the job situation you have discussed . . .

One paragraph disturbs us somewhat—referring to the starting salary of Ph.D.'s as \$700-900/month . . .

We feel that we are reasonably aware of the starting salaries of the

industry and have no information that companies are offering this rate to Ph.D.'s *without experience*. We would agree that this figure would be normal for a person *with experience*.

We wonder if the figure is representative of the country as a whole or is limited to an area or a relatively small number of people.

F. C. PETERSON
Director of Industrial Relations
Dow Chemical Co.
Midland, Mich.

We erred in saying "average." In one region of the country the "\$700-900" figure obtained. In other sectors, salary offers ranged from \$550 to \$800. To eschew the word "average"—which is not really meaningful in such matters—we would say that \$625 seemed to be quite a popular figure.—Ed.

Flying Costs

TO THE EDITOR: By way of writing one of the very few "letters to the editor" in which I have ever indulged myself, I would like to offer the following:

In "Sprouting Bigger Wings" (June 4, p. 28), the statement, "Even tiny single-engine Cessnas take about \$39/hour (30¢/mile)," I cannot swallow. We have operated both a Cessna 170 and a Cessna 180, and at an average usage of about 300 hours per year. I would say that CW's figures should be divided in half.

I have complete records and figures to prove my point and we include in our costs fuel and oil, maintenance, reserve for overhaul, depreciation, hangar, full hull insurance, \$50,000-per-seat passenger liability and \$1 million public liability insurance.

Of course, we do our own flying, but most companies operating equipment of this type do not find it necessary to hire a professional pilot. We expect to operate the Cessna 310 twin that we have on order for approxi-

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:
W. A. Jordan, Chemical Week, 330
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Triple Dead Heat—Carter Handicap—Aqueduct Race Track—June 10, 1944.

Pine Chemicals Division, Naval Stores Department
HERCULES POWDER COMPANY
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NACS-4

EVERYONE WINS with ROSIN AMINE



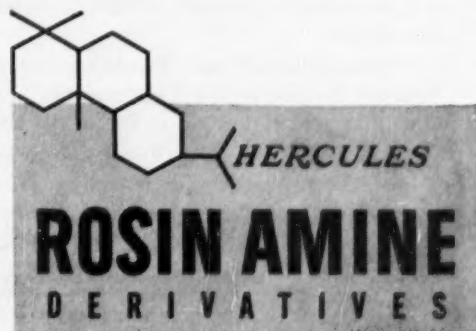
Before manufacturers use a new chemical ingredient in their products, they must be convinced that they have a "sure thing". The recent experience of three large companies provides a typical example of how rosin amine derivatives have been proving themselves a winner.

The three companies—a manufacturer of industrial fungicides, a pharmaceutical firm, and a company making chemicals for the petroleum industry—did their "gambling" in the research laboratory. Once convinced that amine derivatives could improve their products they started using them in full commercial production.

Perhaps you have been missing a good bet by not exploring the way in which Rosin Amine D and its derivatives can serve as chemical building blocks in your products. For example, Rosin Amine D forms wax-like salts and resinous amides by reaction with carboxylic acids and reacts with metal salts to form resinous metal complexes.

The amino nitrogen in Rosin Amine D is responsible for surface activity, selective adsorption, and microbiological growth control which can be tailored to obtain desired physical properties. The wide range of properties of the amine derivatives—available in oil-soluble, water-soluble, and acid-soluble types—offers many challenging opportunities to create new products or improve established ones.

To get your "tip sheet" on this versatile chemical family, just write Hercules. We'll be glad to send detailed technical data.



Here's how to Combine Simplicity and Economy in Waste Treatment



Simplicity and relative economy sum up this unusual waste treatment installation for a large Southern paper mill. Primarily installed for suspended solids removal from general mill effluent, it is also doing a good job of B.O.D. reduction. The 300' dia. Dorr Clarifier installed in an economical 500' earthen basin removes approximately 90% of suspended solids . . . with a B.O.D. reduction of approximately 33%.

This Dorr Clarifier-earthen basin team is suited principally for use as a primary treatment unit. Additional treatment steps can be added as needed, without affecting the initial Clarifier installation.

If you have problems involving any phase of the separation of finely divided solids in suspension . . . or ion-exchange . . . or fluidizing techniques — chances are that Dorr-Oliver and its world-wide organization can help you.



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OPINION

mately 17¢ a mile at a yearly usage of 500 hours. This will give us 100,000 miles of traveling with almost complete flexibility as to where and when we want to go at a total cost of \$17,000—a figure to which we do not feel any stockholder could take exception.

In fairness to the many companies flying these "tiny" Cessnas, I think the record should be set straight. . .

D. G. ELLIS
Sales Manager
West End Chemical Co.
Oakland, Calif.

We're both right. CW cited comparative figures for a Douglas B23, a Beechcraft and a Cessna. These costs were compiled by a company that operates a plane of each type. Too, the Cessna costs are close to those quoted by a Cessna dealer.

This, of course, does not contradict Reader Ellis' records or calculations. Different companies can have different costs depending on bookkeeping practices—rate of depreciation, allocation of charges, etc.—Ed.

'Don't Need New Laws'

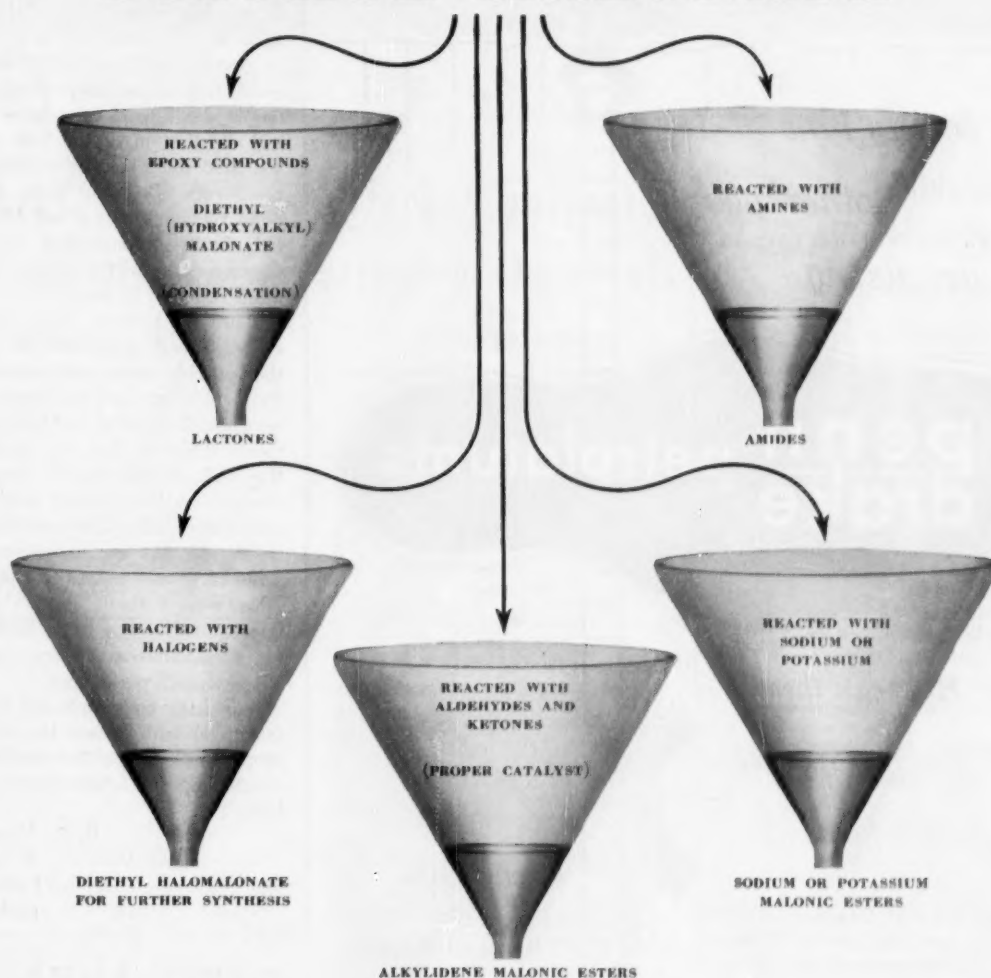
TO THE EDITOR: I like your editorial (June 18), "Let's Skip the Whitewash" concerning the U.S. Public Health Service's handling of the Salk vaccine. The Serum and Toxin Act of 1944 places the responsibility and protection of the public on the U.S. Public Health Service through its licensing power. By this means and the use of prescribed tests, the safety and sterility of polio vaccine should have been assured.

The number of cases of polio of vaccinated children shows a defective system of testing, which, under the law, is the responsibility of the licensing agency. The U.S. Public Health Service is therefore directly to blame.

Also noted is the absence from this picture of one fine objective regulatory agency, the U.S. Food & Drug Administration. Salk polio vaccine is also subject to the Food, Drug & Cosmetic Act. It is noteworthy that no action by seizure, injunction or prosecution has been initiated for shipping allegedly defective Salk vaccine in interstate commerce against any company under this act.

It is always amazing to me that Congress and many intelligent voters are willing for laws to be enforced by individuals in the executive branch

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Well-known intermediate for barbiturates shows excellent potential for many other uses

Dow diethyl malonate, known for years as a valuable intermediate in the manufacture of barbiturates, is finding many other uses in research and production. Five potentials are shown above.

In addition, it may be used to make diethyl (alkoylamino) malonate, an intermediate in amino acid production.

Diethyl malonate may also be used in ketone synthesis. In this use, an alkoxy magnesium derivative of diethyl malonate is reacted with an acyl halide to form a diethyl acylmalonate which upon hydrolysis and decarboxyla-

tion yields the ketone. This method of making a ketone sometimes works when others do not.

There are many other potential uses for diethyl malonate being developed, one or more of which may be of interest to you. Should this be the case, you can be sure of prompt delivery of this high-quality Dow intermediate, as well as other chemical needs, through Dow's widespread distribution system. For an evaluation sample and further information write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. FC 741A.

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OPINION

of the government who have no record of success in private practice or in business. . . . It is tragic, to have a government bureau such as the U.S. Public Health Service regulate pharmaceutical manufacturing industries when such "experts" have had little if any experience in production or control problems, which are faced every day by industry scientists.

We don't need new laws to control distribution of the Salk vaccine; we need intelligent administration of the Serum, Virus and Toxin Act. The polio vaccine fiasco is not Mrs. Hobby's fault—she inherited the whole department from the Democratic Administration of 22 years.

Raise the present salary scales for scientists and administrators so that the capable men and women will compete to get into government service instead of out of it. Make requirements stiffer so that, for example, in the U.S. Public Health Service no scientist or doctor could hold an administrative or policy position unless he or she has an internship of 3-5 years of private practice. There is no other way, I think, for a doctor or scientist to have a basic background for administration of laws affecting business and professions.

Such basic training in our economic system should reduce the socialistic proposals that arise too regularly and should improve administration of our laws. . . .

R. L. VANDAVEER
Allied Analytical & Research
Laboratories
Dallas, Tex.

DATES AHEAD . . .

Society of the Chemical Industry, annual meeting, University of Birmingham, Birmingham, England, July 11-16.

American Soybean Assn., Natl. Soybean Processors Assn., joint meeting, Netherlands Plaza Hotel, Cincinnati, Aug. 29-31.

National Agricultural Chemicals Assn., annual meeting, Essex and Sussex Hotel, Spring Lake, N.J., Sept. 7-9.

Federal Wholesale Druggists Assn., annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., Sept. 11-14.

National Petroleum Assn., annual meeting, Traymore Hotel, Atlantic City, Sept. 14-16.

American Assn. of Textile Chemists and Colorists, Atlantic City, N.J., Sept. 22-25.



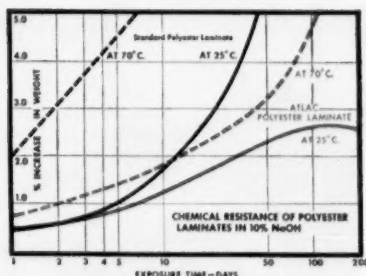
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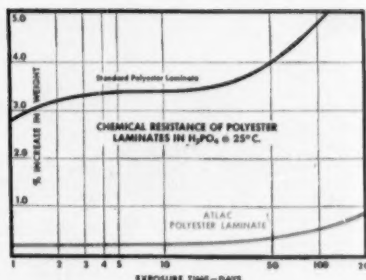
RESISTANCE TO ALKALIES



If you're planning the production of reinforced plastic products that will be used in the presence of corrosive agents, take a look at the unusual properties you get with Atlac 382. This is a *different* kind of polyester. It is based on bisphenol, and offers chemical qualities superior to standard polyesters.

Shown here are two examples of the excellent chemical resistance exhibited by laminates made with Atlac 382. In a dilute alkaline solution (10% NaOH), standard polyester laminates deteriorate rapidly... passing the acceptable point of increase in weight in about fifteen days. Atlac laminates, however, retain their stability far beyond this period. Even in hot alkali solutions, they last almost fifteen times as long as ordinary laminates.

RESISTANCE TO ACIDS



Resistance to many acids is superior, too. Phosphoric acid rapidly deteriorates standard polyester laminates... but causes no appreciable weight change in Atlac laminates.

In prepreg compounds, Atlac 382 gives you flexibility in your formulas. You can control the tack of the finished product, and use any of a variety of cross-linking monomers to gain desired effects. Excellent mechanical and electrical properties are obtained.

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well, the water barrier is broken and normal flow is resumed.

The average treatment costs only a few hundred dollars, and is repaid by increased production in only a few days. The exceptional effectiveness of the Atpet treatment is verified by scores of applications. The technique is valuable in completing wells that are subject to water damage, and as an assistant in fracturing and acidizing jobs.

For a booklet outlining technical characteristics and methods of use, write to Atlas today.

Stable emulsions of paraffin wax readily made with ATLAS surfactants

Emulsions of paraffin wax in water are widely used in industry for many types of wax coating and waterproofing. This typical common emulsion problem of dispersing wax in water is easily solved by means of the well-known Atlas emulsifiers, Span® 40 (sorbitan monopalmitate) and Tween® 40 (polyoxyethylene sorbitan monopalmitate). When exceptionally good stability to hard water and agitation are required, a small amount of stearic acid and Atlas G-750 (solution of sodium sorbitol borate) may be added, as shown in the following formula:

Paraffin wax	30.00%
Span 40	2.90%
Tween 40	3.10%
Stearic acid	0.45%
Atlas G-750	0.30%
Water	63.25%
Preservative	q.s.

Mix G-750 in the water, and add this at 75°C. to the mixture of melted waxes and emulsifiers, slowly and with moderate agitation. The mix will thicken gradually, then suddenly thin out, after which the remaining water may be added rapidly.

Self-emulsifying paraffin wax preparations can also be prepared using Atlas surfactants. A mixture of 86% wax, 7% Span 40 and 7% Tween 40 is melted together at 55° C. and mixed until homogeneous. This preparation will disperse readily in water at 60° C., forming a temporary wax coating easily removed by hot water.

For further information on the uses of Atlas surfactants in dozens of different products, write for the booklet, "A Guide to Formulation of Industrial Emulsions with Atlas Surfactants."

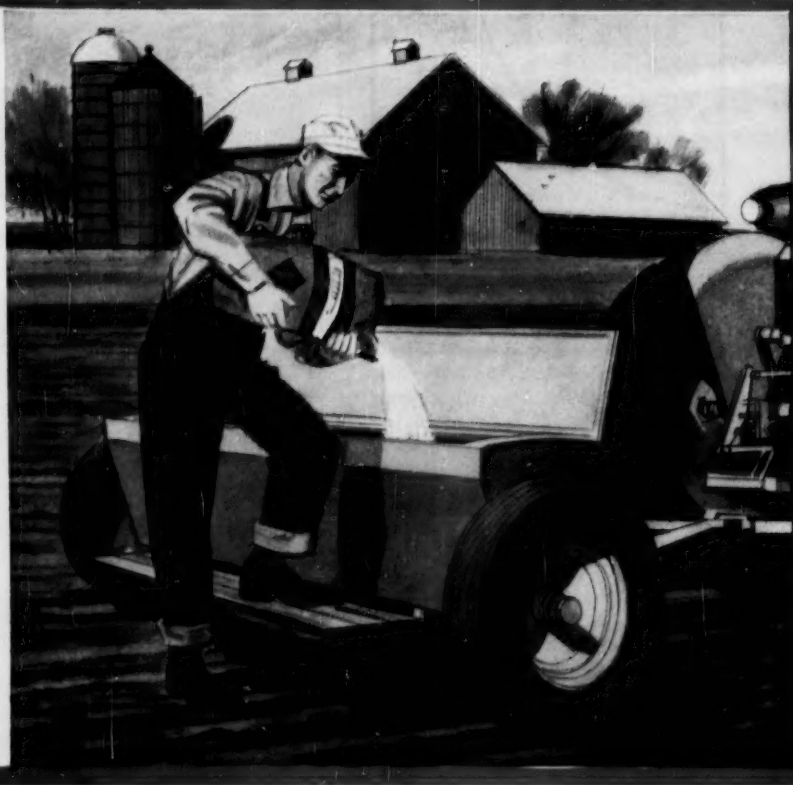
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Not too long ago, phosphate flotation methods were yielding concentrations of approximately 66% grade—and it didn't seem possible to increase the grade. Now, one of the Armacs® makes possible consistent production of 80% and higher grades of concentrate. These Armour cationic flotation reagents are used in a double-float process to remove impurities. This more active, purer product for fertilizer and other products raises producers' prices from \$4.60 to \$7.65 per ton. Only 7¢ worth of the Armac is used per ton of ore.

Armour makes over 100 cationic chemicals. Phosphate flotation is only one of more than 1000 known applications for them. Effective at amazingly low concentrations, they are increasing production and profits for users all over America.



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The Arquad plates out on the walls of cooling systems—smothers algae with a thin, durable, adherent film. It gives continuous protection and controls slime-producing algae—at concentrations maintained as low as 5 ppm!

Whether you are looking for a low cost algaecide or the answer to other cost reduction problems, you may very well find it in Armour's wide range of cationic chemicals. They are reducing costs in over 1000 known applications.

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in your testing programs**

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for Armour cationics**

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Sealing and bonding agents
Textile processing agents
Germicides
Anti-corrosion agents
Pigment wetting
Soluble cutting oils
Paper softeners
Mold release agents
Anti-dust additives
Conductive rubber additives
Latex stabilizers
Sanitizing agents
Primer paint additives
Fat liquoring in tanning
Flotation reagents



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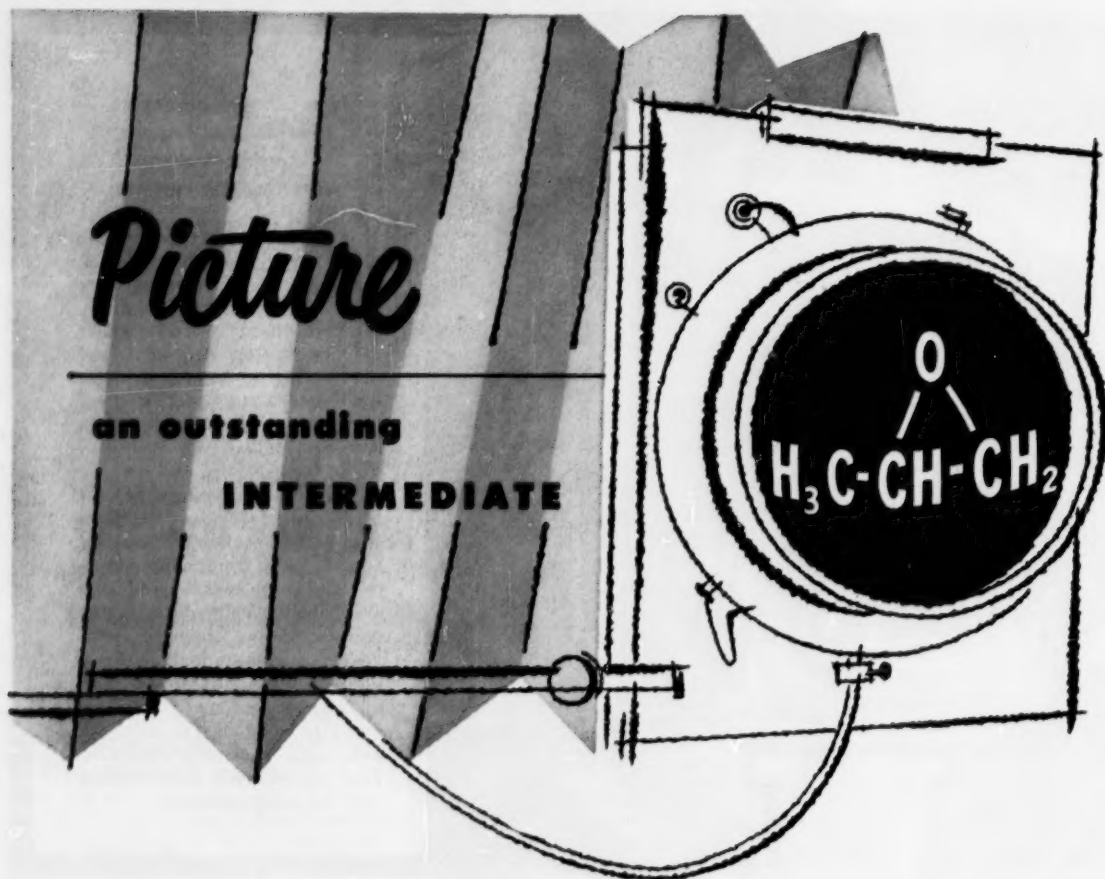
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CARBIDE'S PROPYLENE OXIDE

To meet the increasing industrial need for this excellent intermediate, CARBIDE has expanded its production of propylene oxide. Since it reacts with all compounds having an unstable hydrogen atom, a variety of applications are possible.

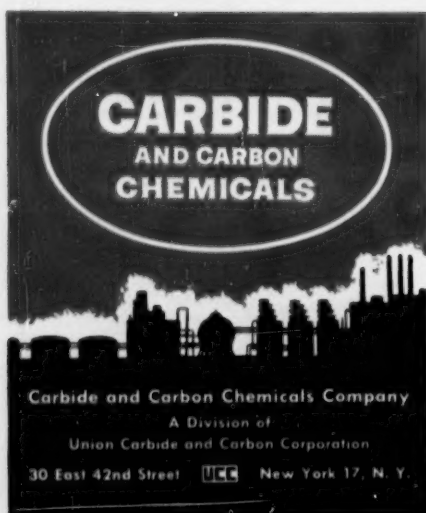
Two of the uses are in the production of petroleum de-emulsifiers and textile lubricants. Propylene oxide is also an effective stabilizer in the formulation of products from resins that contain chlorine.

Your CARBIDE technical representative is ready to discuss these and other applications of propylene oxide. A Technical Information Sheet on propylene oxide is available from the CARBIDE office nearest you; ask for F-8485. In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.

★ ★ ★

An added highlight of CARBIDE's propylene oxide expansion is the increased availability of propylene oxide polymers. Such polymers as UCON fluids and polypropylene glycols 150, 425, 1025, and 2025 are excellent lubricants and also may be used in hydraulic fluids. For additional information on propylene oxide polymers, ask for the booklets, "UCON Fluids and Lubricants" (F-8326) and "Polypropylene Glycols" (F-7220).

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NEWSLETTER

After a week in which common stocks soared to an all-time high, perspiring chemical executives were wondering where the surge would end. A few of the week's outstanding gains: Allied Chemical, $3\frac{1}{4}$; American Viscose, $3\frac{1}{8}$; Du Pont, $10\frac{1}{2}$; Hercules Powder, $3\frac{3}{4}$; Rayonier, $11\frac{3}{4}$.

Adding spark to the country's speculative enthusiasm: word from General Motors that despite additional costs due to guaranteed annual wage, \$500 million will be spent on capital improvements.

It's now official that Union Carbide is the prospective purchaser of the government's Institute, W. Va., synthetic rubber plant—currently in stand-by status.

Considered by most industry observers as a "white elephant," the Institute plant is badly located (in respect to raw materials), can only produce "hot GR-S rubber," has a capacity far greater than even the major rubber-producing companies can utilize.

But whether Congress will take all these facts into consideration and look kindly on sale for nonrubber use is problematical. A "gray elephant," the butadiene-from-alcohol plant at Kobuta, was sold to Koppers only after company officials agreed to keep its facilities intact.

Current tax write-offs on record with the Office of Defense Mobilization include both approvals and denials:

Monsanto Chemical Co. gets 45% write-off on methanol units at Texas City costing \$8,275,000; Marine Minerals, Inc., which will produce raw material for Crane Co.'s titanium plant, receives a 65% write-off on \$1,142,500 worth of rutile and ilmenite mining facilities at Aiken, S. C.; Catalyst Research Corp. gets a 45% write-off on \$18,100 for research and development units.

Glidden, however, has been denied a write-off on a \$7.9-million titanium dioxide plant at Baltimore; American Cyanamid's \$7.5-million certificate for urea production has been canceled (at the company's request); and Escambia Bay Chemical Corp. has been denied application for a \$15.7-million ammonia plant—due to be built in Santa Rosa County, Florida.

Stockholders of Interhandel—the big Swiss firm that is feuding with the government over possession of General Aniline & Film Corp.—were stirring up a tempest on both sides of the Atlantic last week.

In a decision handed down in the U. S. District Court, District of Columbia, "nonenemy" stockholders took a long step closer toward a share of the proceeds—when and if the U. S. government sells GAF. Defeated was a Justice Dept. attempt to use the "Anti-Assignment Statute" to keep most of its seized property.

Meanwhile in Basle, Swiss stockholders were clamoring for a rapid end to the drawn-out GAF litigation. Attacking Interhandel Director Germann, they accuse him of "too much secrecy and mysterious doings with the late financial tycoon, Serge Rubinstein," and demand his resignation.

Latest to join in the Florida hunt for titanium ore is Union Carbide and Carbon Corp.—now sampling sand on Amelia Island, near Fernandina Beach. Humphreys Gold Corp. is also conducting three operations in Florida—one west of Jacksonville Beach, for National Lead; one near Starke, for Du Pont; and another near Lawtey, also for Du Pont.

Crane Co. has been prospecting for some time—with no signs yet of setting up production units—on Florida's West Coast, near Panama City.

•

After a 29-year divorce, International Cellucotton Products Co. and Kimberly Clark Corp. plan to rewed—at least if stockholders give their approval. Behind the move: an attempt (on the part of both companies) to diversify.

•

In the face of the San Francisco peace parley comes word from Defense Mobilizer Flemming that despite stockpiling and expansion of productive capacity, U. S. supplies of nickel, copper, cobalt and columbium are still inadequate in case of all-out war.

•

Snow in June in Marcus Hook has touched off a verbal battle between residents and officials of Sun Oil Co.

Company spokesmen say the dust that coated the streets of the southeast Pennsylvania town was simply the result of shakedown difficulties with a catalyst being used in gasoline production, wasn't toxic, couldn't hurt anyone. Town-dwellers aren't so sure, claim the dust tarnished silver, turned wet bathtubs a rusty color.

•

As one ends, another begins. That's the way it is with chemical labor strikes at the midyear point: just before about 2,000 members of the International Chemical Workers Union (AFL) ended their one-week strike at Du Pont's photo products plant in Sayreville, N. J., members of Oil, Chemical & Atomic Workers Union (CIO) staged a walkout at the 550-man Texas City tin smelter. Sayreville workers got a new seniority clause, an eighth paid holiday, and—for about one-sixth of the plant force—a 5¢/hour wage rise. The Texas City local wants a 10¢ pay boost retroactive to last March 1; the Dutch-owned company operating the plant for the U. S. has offered 10¢ retroactive to May 31.

Meanwhile, blood has been shed in the ICWU's seven-plant phosphate strike in Florida. Police say a deputy sheriff fired his revolver to clear the way for trucks coming out of the Coronet Phosphate plant and a picket walked into the line of fire and was wounded in one leg. Apparently getting set for a long strike, the union has set up a "Union Defense" grocery store to furnish food to strikers, on credit, as needed.

•

The long-awaited Public Health Service report on Cutter's Salk vaccine may be out late this week, but it will only be a progress report—instead of a verdict. As yet, researchers have apparently found no reason for contamination of Cutter batches, and so, though the report is in the works, testing is still continuing. Moreover, Public Health officials now admit they may never know what went wrong.

•

Goodyear Tire & Rubber offers colored sidewalls in six shades that will fit all 15-in. tires. Fondly christened the "Fiesta Wall," the sidewalls can be mounted by deflating the tire, and thrusting a lip on the original sidewall.

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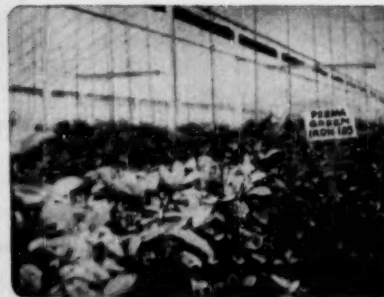
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BUSINESS & INDUSTRY. . . .



CIO'S REUTHER: On contracts, he likes to play one firm against another.

Broad-based Bargaining

That CIO President Walter Reuther might be getting out of touch with the thinking of other union leaders is the question of the week for those who've been watching labor trends in the chemical process industries.

A possible rift between Reuther and AFL and CIO chemical unions showed up last week after Henry Ford II declared himself "very much in favor of industry-wide bargaining." Reuther's prompt retort: Company-wide bargaining, yes; industry-wide bargaining, no.

But leaders of AFL and CIO chemical unions have made it clear that they're definitely interested in broad-based bargaining within clearly defined industrial fields.

Most obvious example is the strike now being waged against seven phosphate-producing companies in Florida by various local unions of International Chemical Workers Union (AFL), under regional Vice-President Walter Mitchell. ICWU—charging that the companies have in fact but not openly acted in concert in previous contract negotiations—is holding out

for an 8.5¢ package deal while the companies have offered 4.4¢/hour.

Even more important to chemical management is the drive launched last week by the Oil, Chemical & Atomic Workers Union (CIO) to weld some 200 of its local unions into 11 company-wide and five sub-industry-wide councils. OCAW Vice-President Joseph Appelbaum urged locals to act quickly on this program "so that we can be in the strongest possible position when negotiations with the companies begin later this year."

The five sub-industry councils would be in lead and zinc, drugs and cosmetics, paints, fertilizers, and gas utilities. Company-wide councils would be for Allied Chemical & Dye, American Cyanamid, Union Carbide and Carbon, Great Lakes Carbon, Hercules Powder, Koppers, Olin Mathieson, Merck and Sharp & Dohme, Minnesota Mining & Mfg., National Lead, and Stauffer Chemical.

In certain instances, OCAW President O. A. Knight has long held, "Industry-wide bargaining would not be illogical!"

Vaccine Spotlights Law

The long-smoldering question of polio vaccine safety, apparently settled three weeks ago, flared up again last week as a panel of 15 top polio experts testified before a Congressional committee.

But about the only conclusion that House Commerce Committee members reached was that the experts themselves are far from agreed on whether the Salk vaccine is safe.

Provoking most of the controversy was Dr. Albert Sabin, who is himself developing a live-virus vaccine. Sabin was first to advocate immediate stoppage of Salk vaccine production, until newer and less virulent virus strains can be adapted and tested for use in the dead-virus vaccine.

Split in Panel: All panel members agree, for example, that the Mahoney strain of Type I polio virus should be replaced as soon as another Type I strain can be proved safe. But only two agree with Sabin's contention that production should be stopped immediately.

Continuing technical controversy over such questions is sure to have an impact—not only on the six companies making the material—but on all other makers of medicinals and pharmaceuticals as well. Questions already raised about the adequacy of government control over biologicals are in turn raising questions over regulation of certified antibiotics and new drugs.

Today, although the Public Health Service licenses producers of most biologicals, the Food & Drug Administration certifies batches of certain antibiotics and insulin only following its own tests.

The question of why these procedures vary has now been raised by Representative Priest. And in the light of current experience with the Salk vaccine, his investigation could well advocate tighter laws on all other drug products—even on so marginally related items as chemicals used as food additives or in cosmetics.



MANAGER REICHHOLD: Wants expansion, public ownership.

Aim: Bigger, More Basic

This week Reichhold Chemicals, Inc. (White Plains, N.Y.) is moving at superspeed with one basic goal in view—that of becoming bigger, more chemical. And thanks to four insurance companies, a loan of part (\$10 million) of the capital necessary to put plans under way has just been negotiated.

Immediately, \$800,000 will be allocated to build a 100-ton/day sulfuric acid plant at Tuscaloosa, Ala., due on-stream by March '56. Besides hiking the company's plastics production from 200 million lbs./year to well over 300 million, this new plant will catapult Reichhold for the first time into heavy chemical production.

Why It's Important: Importance of this move is simple to deduce. Captive basic chemical production will enable RCI to shave raw material costs, give the company a take-off base for further diversification. What has so far prevented Reichhold from progressing in this direction has been the lack of expansion capital to finance the move. Money has been short mainly because the company is privately held.

How much longer private ownership will continue is another matter and one of hot conjecture.

Various Wall St. rumors have had RCI merging with as many as five other medium-size chemical companies, at least two of which are publicly held.

One prime candidate: Catalin Corp. of America,* the firm that recently elected Henry Reichhold director. Rumors persist that another might well be Heyden Chemical. A third strong possibility: a medium-size petroleum firm that would put Reichhold into petrochemical production, insure RCI's heavy chemical position.

Merging of such a combine would increase company equity to \$50 million, boost sales to \$250 million, make the raising of funds for expansion easily possible.

Today, it's obvious that Reichhold has reached a bottleneck in its ability to expand plastic chemical production fast enough to meet demand. Proof: this year's production of phthalic and maleic anhydrides, formaldehyde, and glycerine is already fully committed to customers.

Through public ownership and/or merger, that hurdle could be cleared—simply and quickly.

* Catalin President Harry Krehbiel still firmly denies this possibility.

For Higher Stakes

Like a grass fire whipped up by a sudden strong gust of wind, damage claims in two current law suits of chemical process interest—fanned by inflationary breezes—have abruptly spurted up into more than double their original total.

In the streptomycin suit in federal district court at Newark, N.J., Mary Marcus is quadrupling her original \$5-million claim against Selman Waksman, Rutgers Research & Endowment the patent infringement action in Foundation, and Merck & Co. And in U.S. District Court at Philadelphia, Houdry Process Corp. is demanding \$52.8 million instead of \$21.7 million it first asked from Socony Mobil Oil.

Miss Marcus—who alleges that Waksman appropriated information from certain of her discoveries as he carried out the work that led to his 1948 streptomycin patent—also got from Judge Thomas Meaney permission to amend her complaint in other particulars. She now can allege that she received in 1938 a Canadian patent (No. 376,157) on a process of separating out a species of actinomycetous microorganisms that she says proved useful to Waksman; and she may make another effort to qualify for jury trial and declaratory judgment.

Judge Meaney set a schedule that may serve to speed action in this case. He said the defendants would have 10 days in which to reply to the amended complaint, then would be allowed to take a pretrial deposition from Miss Marcus. Defense Attorney Nathan Reibel has until Sept. 12 to file a memorandum as to why Waksman should be ordered to answer 136 interrogatories.

Houdry now asks judgment for \$37.4 million that it says is due on account of licenses sold by Socony on certain catalytic cracking processes; \$9.4 million for reductions in Houdry's royalty receipts because of lower licensing fees charged by Socony; and about \$6 million for losses allegedly sustained since Jan. 1 this year on account of the lower royalty rates.

At New York, Socony says the allegations of the amended complaint "appear to be as groundless as those in the original complaint." Socony has asked that Sun Oil Co.—like Socony, a former backer of the Houdry firm—be made a party to the suit.



REP. MILLS: Will chairman the Congressional committee taking a . . .

Fresh Look at Taxes

A blue-ribbon group of economists and businessmen geared into action last week on an exhaustive study of the economic effects of U. S. tax policies. They will pursue such elusive questions as how much tax the average worker can absorb before he loses the incentive to produce, whether corporations should be taxed at all on their income, and whether the U. S. can support prolonged economic growth without inflation.

What Makes It Different: Stress laid on discovering the economic impact of taxation is what makes this study different in the minds of its sponsors—five members of Congress who are members of the Joint Committee on the Economic Report.

Led by Chairman Wilbur Mills (D., Ark.), they point out that this particular study differs from most tax inquiries made by Congress in that "there won't be any pressure to raise or lower tax rates"—at least in the initial stages. Politics "will be studiously avoided" in the research stage. However, as soon as the various panels report back in December, there's little doubt that politicians will comb the findings for material to be used in the 1956 elections.

Greatest Impact on Chemicals: The panel study on depletion allowances will be the most important one for the chemical and petrochemical industries to follow. Five industry mem-

bers have been assigned to that panel, and each will take up one special phase of the question:

- Scott C. Lambert, Standard Oil of California, has a broad topic—percentage depletion and the national interest.

- Horace M. Gray, University of Illinois economist, will study how changes in depletion allowances—either up or down—influence the organization of petroleum companies. (He is expected to broaden his study to include possible effects on stock prices and financing methods.)

- James Nelson, Amherst College economist, will cover the relation between percentage depletion and national security. (Nelson was active with the Paley Commission in 1952.)

- Arnold C. Harberger, University of Chicago economist, will examine the present depletion allowance as a factor influencing growth of the petroleum industry. He will try to determine what a "neutral" tax policy would consist of—that is, what kind of a tax policy could be set up that would neither encourage nor discourage investment in petroleum and other attractive industries. (Harberger also served with the Paley Commission.)

- Accountant Henry B. Fernald, of New York, chairman of the Tax Committee of the American Mining Congress, will review percentage depletion rules now on the books.

What these committee members find could ostensibly have a considerable effect on company expansion plans in the years ahead. At the very least, their studies will be noted carefully by tax experts and company financial men.

Fresh Air in the Wind

Upping the Senate-approved appropriation for air pollution research and technical assistance, the House Interstate & Foreign Commerce Committee last week voted to set aside \$25 million for the project—to be spent at the rate of \$5 million/year over the next five years.

Funds would be appropriated to the Dept. of Health, Education and Welfare for grants-in-aid to the states for air pollution abatement purposes and also would be allocated to private and public educational institutions for research and training projects on preventive measures.



AFL'S HUTCHESON: On questions of jurisdiction, he's loath to retreat.

Material's Immaterial

It used to be that the carpenters' union figured it held sway wherever pieces of wood were being shaped and joined together; but now with more and more end-products being fashioned out of plastics, the carpenters are taking the position that the material isn't so important, after all.

President M. A. Hutcheson of the Brotherhood of Carpenters & Joiners (AFL) has issued a charter that may touch off a scrap with AFL's International Chemical Workers Union. Taken into the carpenters' union: 20 men employed by Bellingham Shipyard Co., at Bellingham, Wash., on plastic pleasure boat building and commercial plastics work. ICWU already has a number of local unions made up of employees in plastics molding shops, and may seek an AFL ruling that all plastics workers are in the chemical jurisdiction.

The carpenters' union—which has a long record of feuding with other unions (notably the AFL Machinists) on jurisdictional questions—now seems to feel that its bailiwick should include all wood workers and also those doing jobs that formerly involved wood working.

This will likely be another of the many rough spots that the AFL and CIO will have to sandpaper down before they can make their anticipated merger (late this year) really effective.

EXPANSION . . .

Glycerine: Dow Chemical Co.'s new synthetic glycerine plant at Freeport, Tex., is now in partial production, with full-scale operation scheduled for late this summer. Design capacity: 36 million lbs./year.

Hydrocarbons: Jefferson Lake Sulphur Co. will build a natural gas processing plant at St. Mary Parish, La.; completion is scheduled for year's end. Jefferson Lake has reached an agreement with the Atlantic Refining Co. whereby the latter will furnish the gas and share with Jefferson Lake the natural gasoline and other liquefiable hydrocarbons recovered.

Uranium: Uranium Reduction Co. has broken ground for an \$8-million uranium mill at Moab, Utah. Expected in operation in 12-14 months, the mill will utilize the resin-in-pulp process developed by the AEC at its pilot plant in Grand Junction, Utah.

Cement: General Portland Cement Co. (Chicago) will build another cement plant in Fort Worth, Tex. Capacity: 1.25 million bbls./year.

Plastics: Shawinigan Resins Corp. (Springfield, Mass.) and Monsanto Chemical Co. (St. Louis, Mo.) plan to build multimillion-dollar units at Trenton, N. J., to produce plastic for safety glass interlayer.

Shawinigan, a Monsanto-associated company, will build a plant to manufacture Butvar—a polyvinyl resin base material. Monsanto's Plastics Div. will construct separate facilities for converting the Butvar into sheeting for safety glass.

Both plants are expected on-stream in the last quarter of 1956.

Sulfuric Acid: Noranda Mines, Ltd., will build a multimillion dollar sulfuric acid plant in Algoma, Ontario to meet the production needs of Algom Uranium and Consolidated Dennison Mines. Site of the plant: a 125-acre reserve on the Serpent River Indian Reserve at Cutler—20 miles east of Blind River.

Monomethylstyrene: American Cyanamid Co. has applied to the Louisiana State Board of Commerce for a 10-year tax exemption on its Jefferson

Parish monomethylstyrene plant. When completed (at a cost of \$5 million) the plant will produce 40 million lbs./year of the plastic intermediate.

Paper: Ground has been broken at Berlin, N.H., for construction of the Brown Co.'s \$3.5-million kraft paper bleaching plant. Completion is scheduled for mid-1956.

COMPANIES

Hercules Powder Co. (Wilmington) will build a new \$1-million laboratory at its Experimental Station in New Castle County, Del.

Rayonier, Inc. has completed preliminary arrangements to borrow \$100 million at 3¾% (on a 25-year loan) from Prudential Insurance Co.

Proceeds will be used to retire all

outstanding loans and notes—both of Rayonier and its subsidiary, Alaska Pine & Cellulose, Ltd.—and to redeem Rayonier's outstanding \$2 dividend preferred stock.

National Gypsum Co. is examining sites in Burlington County, N. J., for construction of a \$1-million gypsum products plant.

Three more companies have filed charters of incorporation in Dover, Del.:

- Pan American Chemicals, Corp., listing authorized capital stock of \$100,000.

- Columbia River Chemicals, Inc., with authorized capital stock of \$500,000.

- Chemical Cargo Corp., with authorized stock of 240 shares, no par value.

**Milestone or Stumbling Block?**

AS PRESIDENT EISENHOWER signed into law a three-year extension of the Reciprocal Trade Agreements Act, calling it an important milestone "contributing to the defense of the free world," most critics were agreed in one respect: at least—the President's troubles are far from over.

At least two reasons why: Charles Taft, president of the Committee

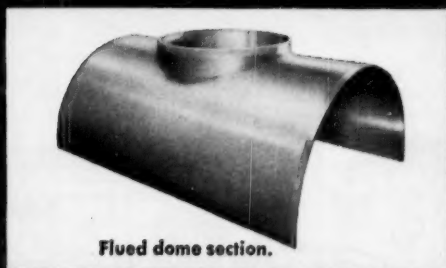
for a National Trade Policy (which supported the Administration's original proposal), claims the law "unfortunately provides loopholes for a flood of new pressures on the President; Sen. George Malone (R., Nev.), a critic of the trade program, promises he'll seek a court ruling on the constitutionality of both the act and the General Agreement on Tariffs and Trade.

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July 2, 1955 • Chemical Week



MOFFETT, SWISHER, LEWIS: In chemical industry's drive toward automation, they won't drag their feet.

DRAWINGS BY GORDON DRAVER

'Robot Plants': No Bogy for Chemical Labor

It's not just a high school flirtation; organized labor—rumors to the contrary notwithstanding—really loves automation.

In particular, the three major labor unions in the chemical process industries—where the sweep toward increasing mechanization and use of automatic controls is relatively far advanced—are openly professing their ardor for the new, more nearly self-operating machinery.

That chemical companies can continue and even accelerate their steps toward development of the legendary "robot plant" without encountering labor opposition is the word this week from leaders of the three big unions in the field: International Chemical

Workers Union (AFL); Oil, Chemical & Atomic Workers International Union (CIO); and District 50 of the United Mine Workers (Ind.) In each case, these unions are in close accord with their parent organizations.

Provisional Welcomes: While these union leaders freely tell of the warmth of their feelings toward automation, they make it clear that they have two important provisos:

- Employees—as well as management and stockholders—should be cut in on higher returns from more efficient operations.
- Companies adopting new, labor-saving devices should help displaced employees obtain other jobs.

In addition, at least one chemical

union holds that the U.S. government should be ready to step in with help for persons who have been laid off because their work has been taken over by new machines.

Pay Hikes Not Automatic: On the sharing of automation's economic benefits, the chemical unions have in mind not only higher wage rates but also shorter working hours. However, they see these benefits as goals to be sought through regular collective bargaining negotiations, not as boons to be granted automatically whenever a company acquires new equipment.

"We expect a fair share of the increased productivity capacity and prosperity of the industry," President A. D. Lewis of District 50 told CW.



ALL THREE UNIONS agree that automation is desirable . . .



—providing that workers receive a 'fair share' of productivity gains . . .



—but they disagree on U.S. role in automation-induced job-switching.

Speaking for OCAW, Administrative Vice-President Elwood Swisher says that "we firmly believe" that wage rates should keep pace with increasing productivity, even when skills are not increased.

ICWU—headed by Edward Moffett—hasn't formulated a specific stand on automation in this industry yet, but is tentatively stringing along with the AFL position that "the benefits of improved production are distributed to all sections of the economy." These benefits are to include higher wages, larger pension payments, and a shorter work week.

'Shock Absorber' Asked: Proviso No. 2—that companies should help find new jobs for displaced employees—is the point that has caused considerable confusion as to where labor stands on automation. Ever since CIO President Walter Reuther spoke on this subject last February, many persons have assumed that labor unions are fighting against automation, just as 19th century workers used to smash machinery at the start of the "industrial revolution" in Europe. For example, at a recent forum on machine tool electrification, an executive included in his speech the remark that "labor calls automation a monster, an industrial demon that threatens to destroy the American Way."

Reuther retorts that he doesn't think that way at all. In keynoting the CIO's first national conference on the topic last spring, Reuther declared, "We shall encourage the speedy development of automation; but we shall insist upon the devising of responsible, broad, national policies to insure that automation will be used for human betterment." He warned that—if not accompanied by adequate "social planning"—it could lead to serious labor displacement, ghost towns, and widespread individual suffering.

Similarly, AFL President George Meany says that "the trade union movement does not oppose technological change." The answer, he adds, "lies in cushioning the shocks that attend it."

Fewer Layoffs in Chemicals: ICWU Secretary Marshall Shafer points out that technological changes are more commonplace in chemical plants than in most other industries. Nevertheless, he adds, technological layoffs haven't been a leading problem for his union.

"Given prosperous economic condi-

tions and a reasonably statesmanlike approach by industry, over-all displacement should be small, but many individuals will have to shift to different jobs with varying degrees of hardship," says OCAW's Swisher. "Companies can alleviate this problem by making changes as gradually as possible, by planning manpower needs well in advance, and by exerting every effort to help train old employees for new jobs."

Swisher's union also wants the federal government to "do what is necessary to support full employment" as the automation trend continues. State governments also should take a hand in this matter, he suggests; "unemployment compensation should be increased substantially to soften the hardship of temporary displacement, and encouragement and assistance should be given in apprenticeship and training programs."

On the other hand, Lewis and District 50 see no reason to invite government to play a part in the continuous change in production techniques "merely because it is now given a new name." To do so, he contends, "would only open the door for government to substitute itself for the process of free collective bargaining."

By any name, automation is not a new love for Lewis' union; for more than 30 years the entire UMW has deliberately maintained a wage policy that UMW President John L. Lewis declared would "inevitably bring about the utmost employment of machinery." In 1925, Lewis wrote: "Fair wages and American standards of living are inextricably bound up with the progressive substitution of mechanization for human power . . . Not only are fair wages a result of the high productivity of machinery, but also relatively high wage costs are an ever present incentive to the introduction of more and better machinery."

This doctrine is now embraced by organized labor in general and by the chemical unions in particular; but unionists of AFL and CIO also "insist upon the rights of displaced employees to have ample opportunity for retraining for the better jobs that will result" from automation. They hold that management should have "socially responsible" wage and personnel programs geared to mechanization plans.

COOPER ALLOY

CORPORATION BRIEFS

• Edited by GEORGE BLACK

VALVE TECHNICAL DATA

A preprint of the technical data section of the forthcoming COOPER ALLOY Valve and Fitting Catalog is available on request. It contains diagrams, design data, cutaway photos, selection, maintenance and repair hints and information on special types and operating mechanisms. Please ask for VALVE TECHNICAL DATA.



DEPENDABLE PUMPING IS KEY

The key to the successful operation of an oxygen analyzer designed for the continuous measurement of oxygen in gaseous streams is the dependability of the Vanton polyethylene pump with neoprene "flex-i-liner" which pumps cuprous ammonium chloride 24 hours a day, 7 days a week, with complete assurance against corrosion or contamination. Full story on request.



RESEARCH UNVEILS NEW ALLOYS

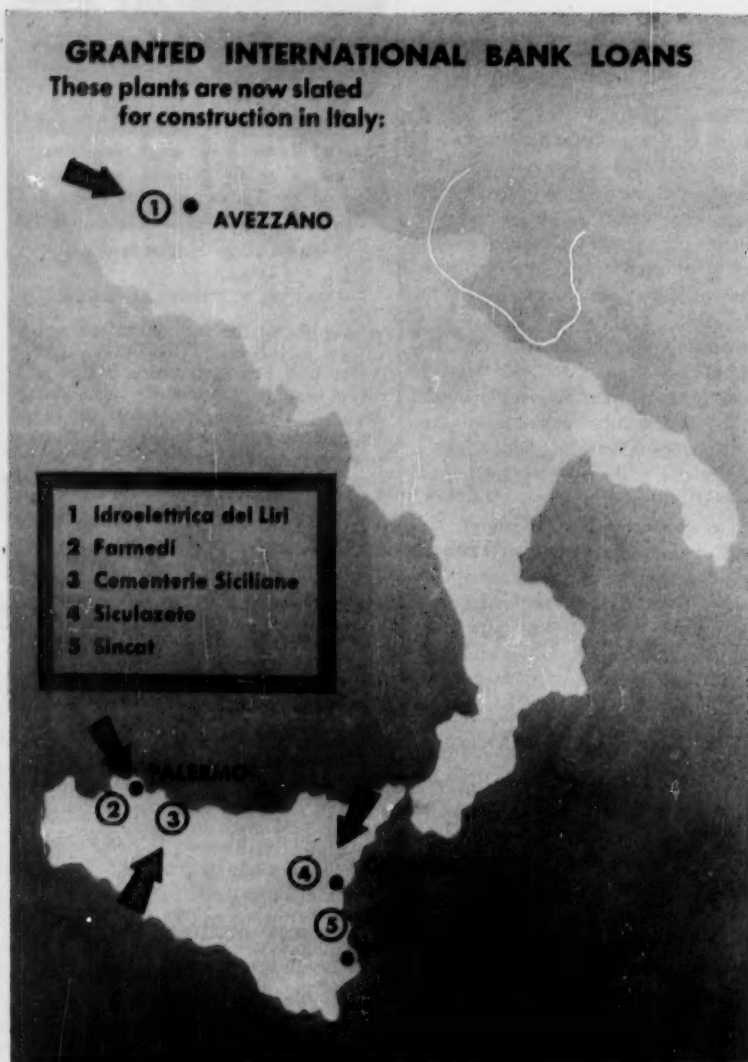
The latest result of Cooper Alloy Advanced Know-How is a new series of precipitation hardenable stainless alloys designed to fill the following needs: 1) a ductile high strength alloy of medium hardness 2) a high strength and high hardness alloy with fair ductility 3) a very high hardness alloy of low ductility. All three alloys have excellent corrosion resistance—equal or superior to type 316 stainless. More complete data on request.



QUIKUPL® CUTS COSTS

A series of interesting case histories showing how Quikupl—the patented stainless steel fitting which can be assembled and disassembled without threading, flaring or welding—cuts time and costs, appears in a recent issue of NEWSCAST. If you're not on the regular mailing list for this bi-monthly technical magazine, ask for your free copy of the May issue.

COOPER ALLOY
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WITH \$15.6 MILLION: These plants are scheduled to put the . . .

Spurs to Southern Italy

Big things are brewing this week for southern Italy—long considered Europe's forgotten land. Providing the spark: a \$70-million loan (\$15.6 of it specifically tagged for construction of new chemical plants) offered by the International Bank to hike agricultural, industrial and electrical output in the "mezzogiorno."

From the standpoint of value, this is the biggest loan that bank has ever granted in Europe, will be the third made to Italy (two others totaled \$20 million). And to chemical business circles in the U.S. the grant represents growing confidence in Italy's once-

precarious economic future.

Who Gets the Money? Recipient of the \$70 million will be Cassa Per Il Mezzogiorno Co., the Italian government agency charged with piloting projects to boost living standards in areas south of Rome. Cassa, in turn, will provide part of the capital (about half) needed to build chemical, textile, irrigation and electric-power plants.

Ticketed for immediate construction:

- A paper plant (Societa Idroelettrica Liri Co.) at Avezzano to produce 7,000 tons/year of newsprint, 9,000 tons/year of magazine paper,

7,000 tons/year of medium-grade paper and 5,000 tons/year of fine paper; loan value: \$4.2 million.

- A pharmaceutical plant (Farmedi Co.) near Palermo for producing a wide range of pharmaceuticals, antibiotics and insecticides; loan value: \$1.6 million.

- A cement plant (Cementerie Siciliane Co.) at Palermo to deliver 132,000 tons/year of concrete; loan value: \$1.7 million.

- A fertilizer plant (Siculazoto Co.) at Catania to make 55,000 tons/year of compound fertilizers; loan value: \$5.8 million.

- Another fertilizer plant (Sincat Co.) near Syracuse designed to produce 110,000 tons/year; loan value: \$5.8 million.

Immediate aims of the program: (1) to develop some heretofore unproductive 10 million acres of land, (2) to provide new job opportunities for hundreds of thousands of now-unemployed Italians, and (3) to stimulate private investment in southern Italy.

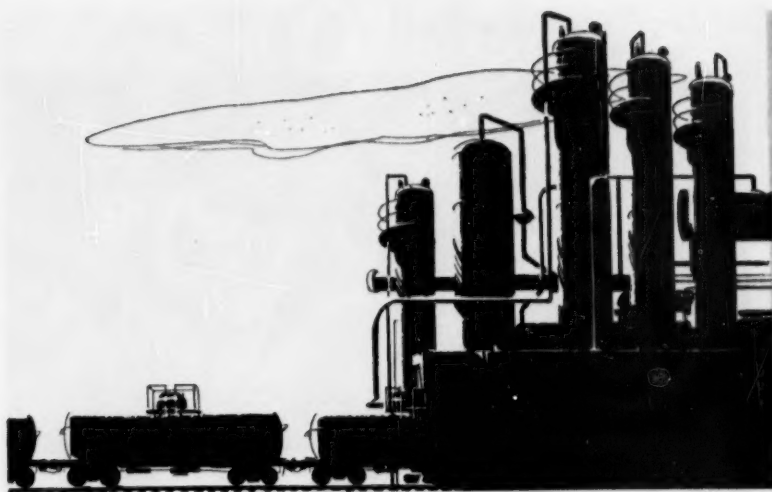
But when the projects come on-stream sometime in 1958, they'll also certainly improve Italy's international trade relations, put it in an even more favorable export position.

Time for Rebuttal

It's time for rebuttal in the Federal Trade Commission's case against the makers of Evis "water conditioner" pipe fittings, which are said to benefit process plants and homes by making hard water "behave softer."

FTC has charged that this and other Evis advertising claims are false and fraudulent, and has brought before hearing examiner Abner Lipscomb evidence that (a) there's no difference between treated and untreated water from the same source, and (b) that scientists have been unable to find any ingredient in the Evis pipe fittings that would tend to take hardness out of water (CW, Nov. 27, '54, p. 16).

The hearing—which has been under way for more than a year—is now winding up in the Federal Office Building at San Francisco, and it's Evis' turn at bat. Latest witnesses have testified that Evis water conditioners have: enabled them to use less coffee and still get a "better brew"; cleaned scale out of pipes; and made for sudsier lather in the bathtub.



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Briefs

from Recent Literature

Ethylene Glycol

Zein base printing inks, which require evaporation of only about 12% of the volatiles to produce phase separation and setting, and which exhibit rapid drying properties at temperatures well below the scorch point of the paper web, are produced using commercial zein, a zein solvent, such as ethylene glycol, a nonsolvent for zein, such as one of the propylene glycol ethers, and water.

Thermoplastic high-melting resins, which are sufficiently hard and friable at room temperature to be pulverized and stored without blocking, which autopolymerize rapidly under the influence of known curing catalysts, and which copolymerize readily with styrene and other vinyl compounds, are prepared with an ethene dicarboxylic acid, a mixed polyol, an aliphatic polyhydric alcohol and a lower alkylene glycol such as ethylene glycol.

Non-volatile antifreeze based on ethylene glycol is greatly improved by the addition, along with the usual corrosion inhibitors, of a stable, non-separating anti-foam agent, consisting of any of certain condensation products of organosilicon oxides, such as methylphenyl silicone, and a lighter or heavier hydrocarbon, selected to impart to the anti-foam agent a specific gravity slightly above that of the final coolant.

A coating composition which imparts softness and flame-resistance to paper, textiles and other cellulosic materials, yet is odorless and does not leave crystalline deposits nor affect the "hand" of textiles, may be prepared by the inter-reaction of urea, dibasic ammonium phosphate and ethylene glycol, in aqueous solution.

Alkyd resins having high resistance to distortion or degradation at elevated temperatures, and which are readily copolymerizable with other ethylenic resin compounds, such as styrene, are prepared by heating and simultaneously reacting ethylene glycol, maleic acid or its anhydride, and dicyclopentadiene.

These developments are abstracted from recent publications or U. S. patents. They may suggest applications of Ethylene Glycol in your products or processes. Permission to practice inventions covered by unexpired patents can be given only by the owners thereof.

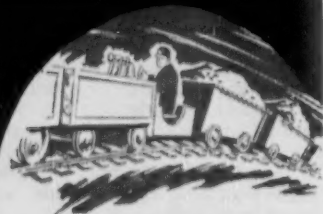
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BUSINESS & INDUSTRY



FLEMMING: Differs substantially with Senator Morse over . . .

WOCs in Washington

The government's "dollar-a-year" men—WOCs—are under fire again. Sen. Wayne Morse (D., Ore.) claims that the WOC system has been abused, that some WOCs may have used their government service for personal advantage or for the benefit of their companies.

At least 50 chemical executives have served as WOC officials in Washington since 1950, almost all in the Commerce Dept.'s National Production Authority and Business & Defense Services Administration. BDSA's present Chemical Division director is Herbert W. Bertine, assistant counsel of Allied Chemical & Dye Corp. (New York).

At Morse's request, the Office of Defense Mobilization is compiling a list of all businessmen who have worked in mobilization agencies since Korea without compensation. The list will show government jobs held by WOCs, previous positions, and specify changes in their present employment following temporary government work.

Causing the Charge: Detonator for Morse's charge was the proposal made by Defense Mobilization Director Arthur Flemming (before a Senate Banking subcommittee) that Congress give its blessing to the so-called "executive research program" under which ODM is lining up private citizens to call on for instant service in case of war. Some 50 men in private industry are already listed on this roster, Flemming

says, but in order to give the program a needed sense of urgency (and backing) Congress "must approve ODM's plan."

Morse, reacting immediately to Flemming's suggestion, says he has been literally bombarded with allegations of abuses in the government's WOC program, points out that Flemming's idea adds insult to injury.

"I want to see how this idea has been working out," he declares. "There's just the possibility that some vice-president or junior partners of companies may have been sent to Washington as errand boys."

For the Defense: Flemming agrees to the demand for a 10-year statement of all WOCs in government service since 1950, but insists that the system has been working out very well. He says he knows of no case in which an executive has abused his position, claims that WOC's record will speak for itself.

Reaction among some of the chemical industry's representatives who have served in Washington is understandably one of annoyance at the whole outburst.

"Such altercations can only serve to destroy industry's willingness to cooperate with the government," one vice-president points out. "If much more of this type of sniping goes on, Washington is going to find itself hard pressed to get any self-respecting chemical executive to serve."

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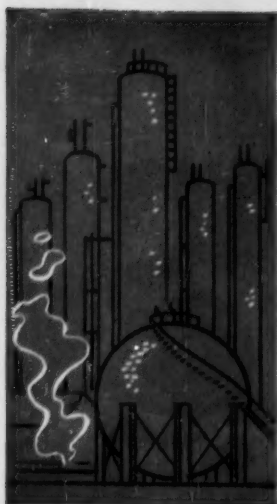
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JUSTICE WILSON: In Texas, uniform prices don't spell monopoly.

LEGAL.

Pricing Suit Dismissed: A decision that may someday be of use to Texas chemical and petrochemical firms that turn out the same products and are members of the Texas Chemical Council came last fortnight from the state supreme court in Austin. Written by Associate Justice Will Wilson, the opinion dismissed a state antitrust suit against 10 oil companies accused of rigging gasoline prices to "artificially and uniformly high" levels.

Wilson said that the state could not prove such a charge merely by showing that the 10 companies are members of a trade association, that their prices were uniform, and that they sometimes exchanged gasoline to save on transportation, storage and handling costs. "As a practical matter," he wrote, "the only thing that can be enjoined (in such a lawsuit) is an illegal agreement." He said the state's attorney admitted he could prove the existence of such an agreement "only as an inference"; and this, the court held, was insufficient.

Plant Suit Settled: The nearly-\$2-million civil suit between Texas City Chemicals and Chemical Construction Corp. (CW, May 22, '54, p. 36) has been settled out of court to the satisfaction of both parties, the two firms stated last week. The plants built for Texas City by Chemico—dicalcium phosphate, sulfuric acid, and uranium recovery—are now in production.



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Palm Oil Oasis

In southernmost Belgian Congo, Unilever today runs the world's largest palm oil business.

Ten mills treat over 100,000 tons of palm fruit each year, extract almost 20,000 tons of palm oil.

In the heart of the Belgian Congo, once festering with ill-treated slave labor, Unilever today maintains the world's largest palm oil business. Carefully cultivated palm plantations have

been hewn out of forests that only four decades ago were uncharted jungles; a complete new kingdom (Leverville) has been carved out of terrain through which wild animals



TANGO MILL: The smoke and chimneys of which are a now-familiar sight in the Congo.

still roam—virtually at large.

More important from the standpoint of the natives: export of palm products is today the Congo's second most lucrative export item (second only to copper); local village tribesmen, for the first time in history, are being offered the advantages of the white man's world.

Health Standards: Two hospitals, have been built in recent years*, medical service is free to all (black) comers.

The idea of free education for all children (at the company's cost) has been an even more recent development; in the past four years the number of native children in primary schools (12 in number) has risen from 550 to 680.

Chance of Advancement: Though most native plant workers still start at the bottom of the rung, there's a good chance they may advance themselves through the company. Head fitter at Leverville today is the son of a one-time cannibal chief; manager of the two mills at Kunga is a native whose education was gained through Unilever's technical school.

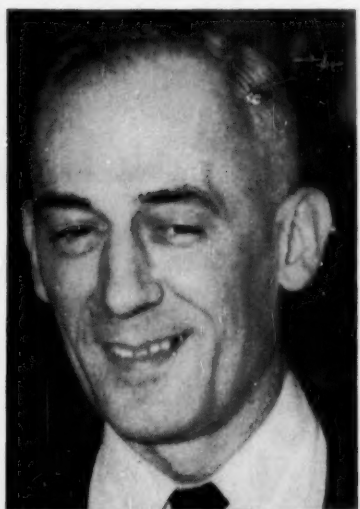
Natives who make good in the mills as laborers can easily advance to the \$100/month class, save most of their earnings and retire after 15-20 years' service. Travel to the outside world is now possible, too—partly by road (Unilever has built 1,500 miles of roads), partly by steamer and ferry (see upper cut).

Still Much to Be Done: Despite all these attempts at enlightened industrial relations, Unilever executives admit there's still much to be done. For all the work done inside its "concession," the heart of the Belgian Congo is still behind the beyond as far as the outside world is concerned.

Very few accepted marks of modern living are to be found outside the spacious villas inhabited by the European colony; even the company's newest mill (at Tango) has none of the conveniences expected of even the simplest U.S. plant.

But Unilever officials are confident that all this will change in the immediate years ahead. "As long as the market for palm oil holds up," one states emphatically, "you can expect great industrial advances in the Belgian Congo."

* One at Leverville, one at Tango.



BUCKMASTER: For rubber workers, a battle for guaranteed annual wage.

LABOR

Widening Circles: The splash made by the new labor contracts at Ford and General Motors is generating waves of guaranteed annual wage requests in other industries.

Of significance to chemical companies: the decision by United Rubber Workers (CIO) to bargain for a guaranteed annual wage in coming contract negotiations. (URW has contracts at some chemical and synthetic rubber plants, helps to set wage patterns in various communities that are rich in chemical operations.) URW President L. S. Buckmaster says his policy committee is also calling for a "substantial" general wage increase and further "extension and improvement" of pension, insurance, and hospital, surgical and medical benefits.

While organized labor is applauding the Ford and GM settlements, management has been critical. The board of directors of the National Assn. of Manufacturers has gone on record in opposition to employer-financed supplementary unemployment compensation on grounds that such a plan:

- Creates inequities among employees.
- Conflicts with state laws.
- Would jeopardize the financial strength of many companies.

Goals and Setbacks: The CIO's four-month-old Oil, Chemical & Atomic Workers Union has suffered several

setbacks recently, but is not being allowed to forget the major goals that were set for it when it was formed.

- At Torrance, Calif., two groups of Shell Chemical employees turned down both OCAW and two AFL contenders, the Operating Engineers and the Metal Trades Council. Of 386 eligible production workers, 183 voted for "no union," 125 for OCAW, and 33 for IUOE. Among 260 maintenance employees, 128 voted for "no union," 67 for MTC, 57 for OCAW.

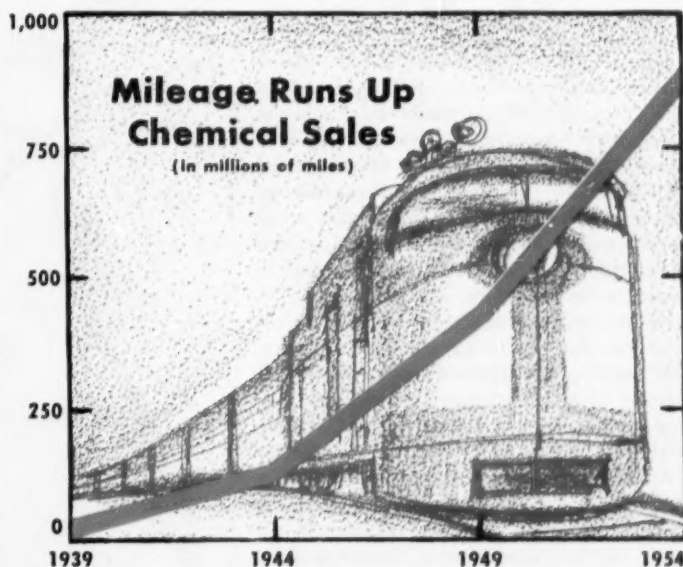
- At Luling, La., a group of 277 Lion Oil employees rejected OCAW as a bargaining agent by 210 to 50.

- CIO Organization Director John Riffe has dropped a reminder that OCAW is expected to waste no time in going after Du Pont employees. "Du Pont remains as a challenge to CIO," Riffe remarked. "Some say that the company gives the workers too much for us to be truly effective

among them. The same things were said of other basic industries, such as auto and steel, but today they are our biggest unions. The job of organizing Du Pont workers will not be an easy one, but it can be done by facing up to the magnitude of the Du Pont dynasty and providing CIO leadership and resources."

Office Workers Lose: Another union that is being spurred on despite a recent chemical setback is the AFL's Office Employees International Union. While the union's annual convention was hearing a prediction by CIO President Walter Reuther that a mass drive to unionize millions of unorganized white-collar workers will be one of the first moves of the merged AFL and CIO, that union was suffering a 349-to-64 defeat in an election for Dow Chemical office and hospital personnel at Freeport, Tex.

IMPACT



Source: Assn. of American Railroads from reports of the Interstate Commerce Commission.

Diesels Clamor for Chemicals

WHEN SOME 800 new diesel locomotives roll into service this year, they'll push the tally of serviceable units in the U.S. up to a staggering 23,800. And for chemical suppliers, interest in the additional diesel mileage that will accrue is more than academic. In

1955, for example, diesel engines should consume some 3.5 billion gal. of diesel fuel, 28 million gal. of diesel lubricating oils, and 360,000 gal. of paint, thinners and fillers. What's more: each new engine put in service will use from 448-640 lbs. of sulfuric acid/battery unit.

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Carbose* is the trademark for our sodium carboxymethylcellulose — CMC, that is . . . for our CMC is made by a unique Wyandotte-developed process. ¶ Our detergency-grade Carbose is a special CMC for promoting home and commercial soaps and detergents. And in the word "promoting," lies its secret. For Carbose is not just another builder. It is used in addition to builders. ¶ And what is "promoting"? It's the unusual talent Carbose has for removing soil from fabrics, and keeping that soil in suspension—which results in maintaining the whiteness of the material. In a word: with Carbose, synthetic detergents clean fabrics cleaner — a fact that can be demonstrated with a simple test: Just add some to your product and compare the cleaning results. ¶ If you'd like to make this test, write us. We'll forward samples of Carbose and technical data. Wyandotte Chemicals Corporation, Wyandotte, Mich. Offices in principal cities.

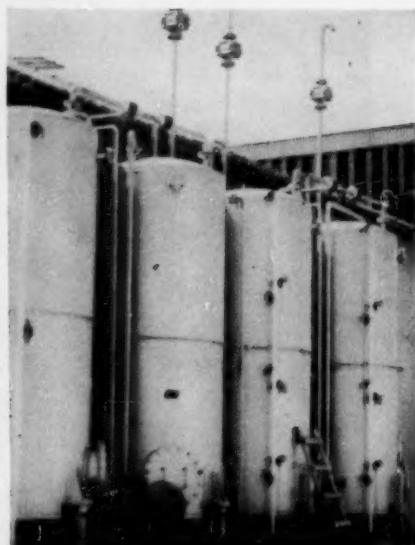
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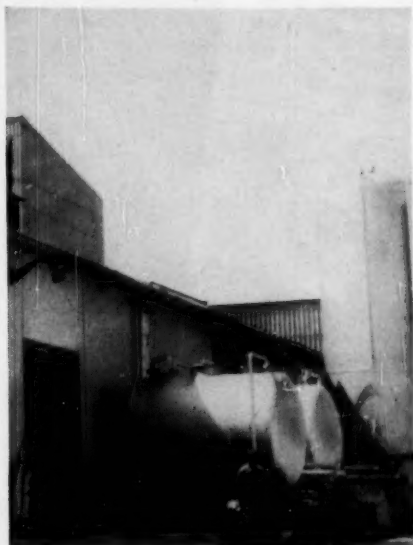
Pharmaceuticals/France: Reason for Chas. Pfizer's decision to produce antibiotics in France, Great Britain and South America is the realization that company revenue from overseas sales is reaching a top limit—due to restrictions on use of dollar exchange.

Pfizer, which last year exported one-third of its \$147 million gross, has just brought a French plant into operation (in cooperation with the French firm Clin-Comar), will formally open its British basic fermentation plant (supplementing existing pharmaceutical units at Folkstone) later this month.

Pfizer is also active in Japan, has recently formed a company, to manufacture antibiotics, with Taito Company, Ltd.—a leading Japanese producer of penicillin. The company (to be known as Pfizer-Taito Company, Ltd.) will undertake production of Terramycin, tetracycline, vitamins, and steroid hormones.

Paint/South America: A technical know-how and licensing agreement has been signed between Glidden Co. and the paint-manufacturing subsidiaries of W. R. Grace & Co. in Argentina, Chile and Peru.

Fertilizer Exports/West Germany: West German exports of fertilizer totaled 129 million marks in the first quarter of 1955, compared with 112 million marks for the corresponding



... will first make Terramycin, tetracycline.

period a year ago. However, in overall percentage of total West German exports for the quarter, fertilizers accounted for 16%—approximately the same proportion as in 1954.

Coke Ovens/India: The Indian government has approved the West Bengal Administration's proposal to set up a \$10-million coke oven plant at Durgapur, 140 miles from Calcutta. Besides coke ovens (capable of handling 1,235 tons of coal and 65 tons of coke breeze daily), plans include construction of ammonia, sulfuric acid, coal tar, and crude benzol units.

Petrochemicals/Peru: According to the Italian embassy in Lima, Italian financial interests will make a loan to Peruvians for construction of a petrochemical plant in Peru. Capitalized at the equivalent of \$4 million, the company formed to handle production details will be called Fertiza Limitada; installation of production equipment will be supervised by Montecatini (Milan).

Production is scheduled to start late in 1956.

Sino Trade: Communist China has decided to purchase 3 million units of streptomycin from Japan. Japanese firms slated to export the drug: Meiji Seika, Kyowa Hatco, Riken Kagaku and Nihon Seibutsu Rigaku. Shipments are scheduled to get under way immediately.

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1000 SUN HOURS		DECOMPOSED	

Florida Sun Proves Value of Paraplex G-62

The stabilizing effect of PARAPLEX G-62 in vinyl compounds was dramatically demonstrated during recent tests under intense Florida sunlight. The samples shown here were exposed for periods ranging up to 1000 sun hours. The improvement imparted by PARAPLEX G-62 is clearly shown by the exposed samples.

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Write for "What You Should Know About the PARAPLEX and MONOPLEX Plasticizers", a handy summary of properties and applications.

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NEW APPROACH: Reading racks open industrial relations doors.

Catching on Fast

Miniature newsstands are a spanking new sight at many a chemical plant across the country this week. But the idea is far from a simple stunt to pique employees' curiosity.

Instead it's a well-calculated attempt by personnel men to swing the reading rack into a tool of management—one by which it may be able to get the company's story across to workers.

Aside from purely propaganda merits, the idea achieves a host of other ends, too. Rack-boosters are agreed that the plan (if properly implemented) builds morale, creates healthier worker-management climates.

States one enthusiast: "We're convinced that by giving workers a chance to pick up selected free booklets, management gets a chance to reach employees with its thinking on subjects otherwise hard to approach.

Some companies are so impressed with the value of such an opportunity that they even write and print their own booklets.

How It Works: In general, though, most companies prefer signing up with one of the publishing houses* that specialize in writing, printing and distributing reading rack material. Fresh

titles are made available weekly (or less frequently, if desired) for as little as \$1.50/year/worker. That's based on a 50% "take" (one booklet/every second employee).

Reading content ranges from economic and social problems to inspirational and self-help themes. Home-plant safety and health subjects are popular too. But hobby and recreational booklets make the strongest bid for worker attention.

In the economics category, a leaflet called "Miracles By the Dozen" (Mercer Publishing Co.) is claiming special attention from chemical workers these days. Main appeal: its discussion of the chemical industries and what they do for the man on the street. Text touches fundamental economics and free enterprise, is easy to read.

Union Reaction: Do unions back management-sponsored reading for workers? So far the answer is yes. Chiefly because booklets stress general, nonbiased, informational subjects, unions generally are willing to go along with the idea as a fringe benefit. And that's the spirit personnel men aim to keep.

KEY CHANGES. . .

Earle S. Ebers, to general sales manager, Naugatuck Chemical Division, U.S. Rubber Co. (New York).

Edwin B. Brooks, to general sales manager, Pigment Division, Columbian Carbon Co. (New York).

William Allen, to chemical director, Agricultural Chemicals Division, American Chemical Paint Co. (Ambler, Pa.).

R. M. Moore, to vice-president, administration, Pittsburgh Coke & Chemical Co. (Pittsburgh, Pa.).

R. L. Troxell, to vice-president, American-Marietta Co. (Chicago, Ill.).

G. Daniel Davis, to executive vice-president, Nopco Chemical Co. (Harrison, N.J.).

Charles B. Lockton, to vice-president and treasurer, and **Maurice E. Ash**, to vice-president, purchasing, Chemical Enterprises, Inc., New York.

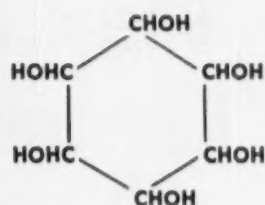
R. Lindley Murray, to board chairman, and **Bjarne Klaussen**, to president, Hooker Electrochemical Co., Niagara Falls, N.Y.

* Like Good Reading Rack Service, Mercer Publishing Co., Stevens Publishing Co. (all in New York), to mention a few.

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WAXES AND POLISHES which contain Cyanamid's CATIONIC SP Antistatic Agent have proved effective in reducing dust and lint pickup. Desired gloss on polished surfaces usually is brought out by rubbing or buffing. Static charges generated by such treatment strongly attract lint and dust. However, CATIONIC SP in amounts of 1% to 5% in wax pastes or emulsions reduces such pickup markedly. (No. 1)



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ROUND-THE-WORLD LUGGAGE comes back good as new. Made of glass fiber and Cyanamid's LAMINAC® Polyester Resin, these cases withstand the rough handling that usually breaks, dents or scars ordinary luggage. They are available in a range of attractive colors which are molded in so the color can't chip or peel. And their handsome finish, with glass fibers contributing an interesting random pattern, will not stain or absorb dirt or moisture. (No. 3)



FLEXIBLE VINYL WALL TILE stays supple and durable for years, thanks to phthalate plasticizers made with AERO® Phthalic Anhydride. Available in high purity, and in either flake or molten form, AERO Phthalic Anhydride imparts no unwanted color characteristics to plasticizers for vinyl compounds. Low volatility of these plasticizers assures retention of flexibility. Yet, for all its qualities, AERO Phthalic Anhydride is low in cost. (No. 4)

News Briefs

AEROCARB® S AND R CARBURIZING COMPOUNDS offer two cost-reducing factors: high penetration rates for faster case hardening, and wide temperature range in the bath for greater versatility. Simple variation in R to S ratio gives close chemical control. Bath gives light or deep case in minimum time, while finished parts are cleaned easily, are scale free, and unusually bright. (No. 5)

AMMONIA SYNTHESIS proceeds at peak efficiency with AERO® Specialty Catalysts. High activity and long-term stability of these catalysts are time-proved properties. Specific AERO Catalysts are available for each commercial process: hydrogen production by methane-steam reaction or water-gas shift reaction, or direct ammonia synthesis from nitrogen and hydrogen. A new bulletin on AERO Specialty Catalysts will be sent on request. (No. 6)

MEGASUL® NITROPHENIDE, safest, most effective drug for preventing coccidiosis in chickens, now is offered to feed manufacturers in a free-flowing, non-bridging, dust-free form. This assures even distribution of nitrophenide throughout every bag of feed. In addition to preventing outbreaks of coccidiosis, continuous feeding of MEGASUL to birds results in faster, more uniform growth, more efficient feed utilization, and improved well-being. (No. 7)

CYPEL® PAPER RESIN EMULSION, now available, produces excellent grease-resistant coatings with heat-sealing properties on paper and paperboard. CYPEL blends with starch, casein, soya proteins, and synthetic water-dispersible polymers to give toughness and non-blocking qualities to grease-proof paper coatings. (No. 8)

*Trade-mark



C.W.

SEND more information on the following items mentioned in the July, 1955 issue of LIFE on the Chemical Newsfront:

No. 1, 2, 3, 4, 5, 6, 7, 8.

Name

Company

Address

City Zone State



PUSH-BUTTON PANCAKES: Leadoff in aerosol foods, canned batter.

Pressurized Groceries

Edible aerosols loom as the big field for new aerosol products—everything from breakfast pancakes to after-dinner desserts. Poser: FDA hasn't okayed fluorinated propellents.

There's nothing like success to build confidence. The firms in the aerosol business, from valve makers to container producers, have been hip-deep in success for the past half-dozen years or so, and have developed a faith and confidence in the potentialities of their field that is matched in few other industries.

Now, aerosolers are looking for new fields to conquer, and there's no secret that the food packaging industry, with sales volumes that completely outclass those of any of the currently pressure-packed products, is a target some have set for themselves.

Right now there's plenty of talk—and at present, talk is about all—of such food items as cake toppings, catsup, salad dressings, and flavored syrups (*CW*, March 12, p. 86) put up in handy push-button containers.

One such product, a pancake batter called Whiz Cakes (*see cut*) re-

ceived limited test-marketing in some Midwest areas. It got a lot of publicity for its makers, Whippette, Inc.

Successful Example: Suggestive of the success the pressurized food-stuffs can have, aerosolers look to the whipped cream products. An estimated 30 million sold in '51; they've since climbed to a pace estimated to push sales to 75 million units this year (cream and vegetable oil whips). Clayton Pressure Products (St. Louis) is one valve maker that has profited particularly from this boom, and many of these dairy whips have been made under license from another St. Louis firm, Reddi-Wip, Inc.

Matter of Form: The dairy whips are representative, too, of the possible forms of future food aerosols. Water-based emulsions, which produce a foamlike material as they come from the can, seem to be logical forms for condiments, cake toppings. Whip-

ette's Whiz Cakes were such formulations.

Although these foam-producing emulsions are simple to devise, they so far are not everything that's desired. Catsup and mustard, for example, don't always have an appearance or texture that the public is familiar with. Too, the small amounts of propellant left in the foam can affect the flavor.

Foams needn't be the only form, of course, of edible aerosols. Dry powders have been devised for other products; plain pastes and liquids can undoubtedly be worked out.

Who's Pushing: For the currently commercially produced food items, nitrous oxide, by itself and in combination with carbon dioxide, is virtually the only propellant. The common 85% nitrous oxide, 15% carbon dioxide mix is a ready-to-pack combination patented by S. S. White Co.

Firms that want to use a straight nitrous oxide propellant can license from Instantwhip-Dayton (Dayton, O.). And a number of firms offer units to propel the whips from their containers with carbon dioxide cartridges.

There's no doubt, however, that makers of the fluorinated hydrocarbons have an eye on the business going to nitrous oxide and carbon dioxide. Of the two producers of the fluoro propellents, Du Pont and General Chemical, General has been the more active in its investigation of food potentialities.

Neither firm, of course, hesitates to point out possible advantages that might accrue with use of the halogen propellents. Greatest of these, perhaps, is constant pressure. Currently offered food products have plenty of push at the start, but the pressure drops as the contents are expelled (some say oxides won't even completely discharge a container). Also, the fluorinated types could be packaged at somewhat lower pressures.

Safety Factor: Key reason fluorinated propellents are not used is lack of Food & Drug Administration approval. Toxicity studies have not been made of halogenated hydrocarbons taken internally, although data on their safety when breathed has been available for years. Now, both Du Pont and General are striving to get FDA approval. It involves several

years' testing, however, and is costly.

There might be a way to get around the lack of FDA sanction, though. More than one firm has been toying with the diaphragm principle—foodstuff on one side of a flexible barrier (or envelope), the propellant on the other. Thus, food and gas don't come in contact.

Such a design, besides separating the two products, would permit packaging of pastes and liquids. But right now, such units are not commercial, are rather costly, and don't always do a 100% effective job of keeping the two components of the aerosol apart (flexible plastic envelopes are permeable to the propellant).

Drugstore Cousins: Should the fluorinated hydrocarbons become usable food propellents, either through special containers or by eventually getting FDA approval, more than just edible aerosols would likely be marketed. One of the first: toothpaste.

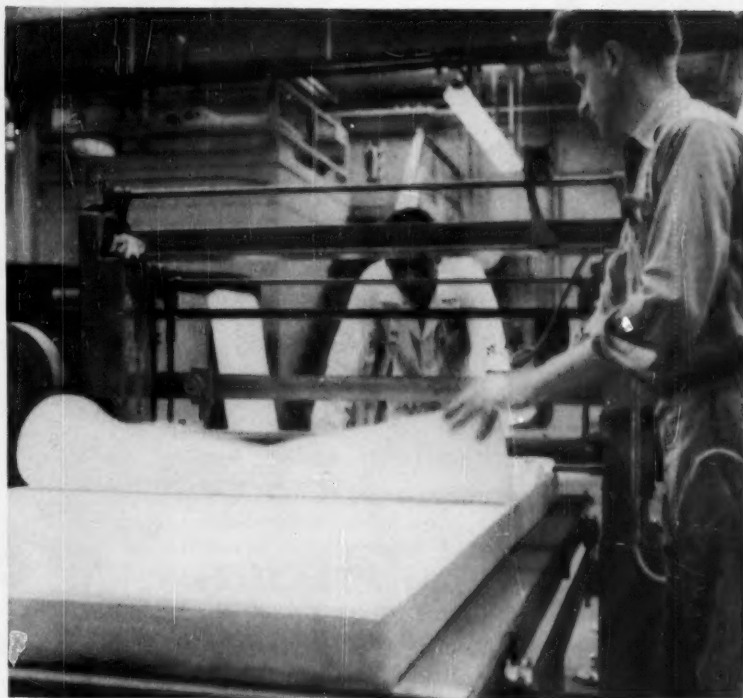
Already in test formulation by a number of aerosol fillers, such dentifrices have also been objects of study by all the major toothpaste makers. Their advantages over the collapsible tube pack seem slight: there's a certain convenience, a possible improvement in esthetic appeal.

These advantages, however, would be achieved at considerable expense—the aerosol would likely add 15¢ to the unit package price of a dentifrice, compared with the less-than-a-nickel tag on a collapsible tube.

But price has seldom proved an insuperable barrier to consumer acceptance in the case of other aerosols—their success in such fields as shave creams, insecticides and hair sprays bears this out.

Kickoff Time: While aerosolers calculate the size of the potential markets, they're continuing their experiments. Even those firms seemingly most cautious and pessimistic about the future of food aerosols admit interest in the subject.

Just what products will kick the whole movement off is hard to say. But with major food firms like General Mills actively studying the products, aerosol producers know they can't let their research lag. What's more, it would be completely out of character for the farsighted aerosolers to be caught unprepared.



POLYURETHANE BLANKET: Starting point for a host of foam polyurethane products.

Isocyanate Preview

With its new isocyanate chemicals plant in New Martinsville, W. Va., half completed, Mobay Chemical Co. (combination of Monsanto and Bayer) last fortnight showed off some of the uses of the versatile polyurethanes made from its chemicals.

The New Martinsville plant, due for completion this October, will be capable of turning out several hundred tons of isocyanate chemicals, and the equivalent amounts of polyester resins. (It will supply raw materials, not produce the finished urethane products itself.) Currently, Mobay has licensed some 9 firms to make polyurethane foams* the first products of commercial stature, but there are a host of other applications on the way.

(About the same time Mobay was showing off its polyurethanes, American Collo Corp., Ridgefield, N. J., was

concluding agreements with Robinson Cotton Mills, Ltd., Woodbridge, Ont. Robinson-Collo Canada, Ltd., as the new firm is named, will make Collo's brand of polyurethane foam under license from Mobay. Production will likely start in September of this year.)

Simplicity Illusion: Although the foam urethanes have been available (often imported) in this country for more than a year, they have been made here only in limited amounts. Their manufacture, seemingly simple, requires special equipment, and skilled and experienced operators. Research on better manufacturing equipment and methods is being continued by Mobay as well as others.

The "recipe" for foam can be outlined easily—100 parts polyester, 7-8 parts dyes, water, catalyst, surfactant (1/10 part surface active agent gives pore size control), 35-40 parts isocyanate. Combined, by special metering devices in molds, these chemicals produce foam in a few seconds. Mold pressure can be varied greatly—usu-

* Dryden Rubber Division of Sheller Mfg. Corp.; Dunlop Tire and Rubber Corp.; William T. Burnett and Co., Inc.; Goodyear Tire and Rubber Co.; American Collo Corp.; Albert Trostel and Sons Co., Inc.; B. F. Goodrich Co.; General Tire and Rubber Co.; and Curtiss Wright Corp.



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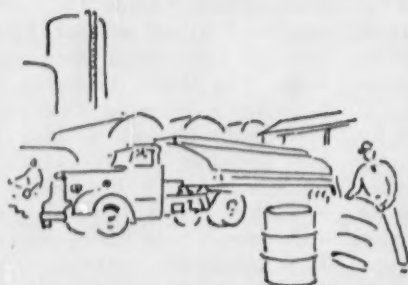
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ally it is 4-5 psi. to make the basic blankets from which parts for mattresses, pillows, seat pads and the like are cut.

The resultant foam—it can be made soft or firm, with a wide range of densities—maintains its properties over a broad temperature band, —20 F to 175 F. It will stiffen at —70 F, but won't break. The foam, much tougher than foam rubber, can be sawed, sewn, and glued into any shape desired.

Just a Starter: The foams, although No. 1 commercially now, won't be the only urethane product to find uses. Extremely durable rubberlike material for tires has been made (CW, April 30, p. 64). And magnet wire coating (in addition to other paints and varnishes) shows a number of interesting possibilities (to see what it will be competing with, CW, May 14, p. 62).

Due for production by several firms later this year, the magnet wire coating is said to be exceedingly tough and flexible, and usable up to 150 C. Made with Mobay's Mondur S isocyanate, in combination with Multon R-2 polyester, the coatings have top-grade electrical properties as well as mechanical ones.

The polyurethanes are applied to wire from 40-50% solids solutions by standard wire-coating processes. The jacketing is "self-fluxing," when soldered—it needn't be stripped from the wire before soldering, since its melts off when the iron is touched to it.

Boot Proof: Similarly tough and versatile coating for uses besides magnet wire are on the way. For household jobs, rugged paints that can resist scratching by hob-nailed boots are promised. These will be offered in a wide range of colors, can withstand acids, alkali, grease and water attack.

Industrial applications of the varnishes and paints are sure bets, too. Again, their resistant properties will score—particularly since the resistance is maintained at moderately high temperatures.

Mobay will supply know-how and equipment, as well as isocyanates and polyesters to firms interested in developing these paints.

Although its New Martinsville plant is not yet in production, Mobay is actively supplying isocyanates to some firms. Now, raw materials are being made in Anniston, Ala., and imported from Bayer in Germany.

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No Soil, No Silica

A new kind of soil retardant—without silica—is putting American Cyanamid into the antisoil carpet treatment rush. Called Cyana Soil Retardant, the new treatment avoids the patents held by Mohawk Carpet Mills, Inc., and Monsanto, all of which deal with silica treatments (*CW*, May 21, p. 74).

Cyanamid's treatment is similar in principle and effect to Du Pont's Ludox (basic material of the silica treatments): the compound fills in the roughness on the fibers with microscopic material, slows the soiling of rugs. Cyanamid says its tests show Cyana will keep carpets, subject to foot and air-borne dirt, clean up to 5 times longer than untreated articles.

Other claims for Cyana: it doesn't impair the hand of the rug, has little effect on the light-fastness of dyes, doesn't cause "dusting" (loss of the soil retardant when rug is shaken or vacuumed).

Spray or furnishing roll application can be used for Cyana; in either case, it is the last wet treatment on the rug. On dense-pile rugs, only the top third or fourth need be treated, but for thinner rugs, the antisoil should be applied all the way through.

Cyanamid says that at 13¢/lb., Cyana costs no more, and in some cases less, than silica treatments with the same effectiveness. For the future, Cyanamid sees applications on other pile fabrics, flat fabrics, painted walls, wallpaper—even outside walls. It isn't in a consumer product yet, but Cyanamid says it is considering selling Cyana to formulators for the home market.

Plastic Notes

Monsanto's Opalon 75219 is a new vinyl-chloride extrusion compound with nonmigratory plasticizer. The compound contains a fungicide to inhibit fungus growth in such applications as refrigerator door gaskets. Opalon 75219 was designed for vinyl parts that come into contact with styrene—styrene will not leach out the vinyl plasticizer, nor cause a component to soften or deteriorate.

• Morflex P-50, made by Morton-Withers Chemical Co. (Greensboro, N. C.), is a new high-molecular-weight polymeric plasticizer for vinyl resins. P-50, claims Morton-Withers, gives the maximum combination of

efficiency, permanency, light color and ease of handling now available in polymeric products.

• Plio-Tuf C75, Goodyear Chemical Division, is a new thermoplastic, modified high-styrene resin designed for easy calendaring and heat stability. The material, used in the production of rigid sheets having exceptional stiffness and low temperature impact, can be post-formed where rough usage is anticipated. Plasticizers aren't required.

• Two experimental polyesters suitable for use in making polyurethane foams are announced by Reichhold Chemicals, Inc. (White Plains, N. Y.). One is for flexible foams, the other for rigid foams. Unlike latex rubber, the flexible foams can be sewn, stand up well to laundering and dry cleaning, are flame retardant, have good resistance to ozone and sunlight. Half

as heavy as cork, the rigid foams have about the same insulation value, can be foamed in place.

• **Far East Branch:** Risdon Manufacturing Co. (Naugatuck, Conn.) has licensed Aerosol Industries Corp. (Osaka, Japan) to manufacture and sell the complete line of Risdon aerosol dispensing valves in Japan.

• **Safe All Around:** Niagara Chemical Div. (Food Machinery and Chemical Corp.) has developed and marketed a new formulation of its Pyrenone insecticide. The new material, Pyrenone 606, is an oil-free emulsifiable concentrate, with 60% piperonyl butoxide and 6% pyrethrum. It has been registered with the U.S. Dept. of Agriculture for use as a grain protectant (on wheat, oats, corn, barley, rye and other small grains)—the grain can be used for processing into food for human or livestock consumption. Niagara says 606 may also be used as a livestock spray.

• **Paint Thickeners:** For increasing the viscosity of paints, Nuodex Products Co. Inc. (Elizabeth, N. J.) is now selling a pair of additives, Nuvis-1 and Nuvis-2. No. 1 is a liquid primarily for alkyd systems; No. 2 is a powder additive, for gloss and semi-gloss enamels.

• **Later Law:** The pesticide chemicals amendment of the Federal Food, Drug & Cosmetic Act, scheduled to become fully effective on July 22, may be delayed in individual cases. At the discretion of the Secretary of Health, Education and Welfare, the law, dealing with food products treated with pesticides for which tolerance limits have not been established, may be held off until the end of the growing season, Oct. 31. In applying for an extension for his product, the pesticide maker should write to the Commissioner of Food and Drugs, showing that use of his product for the remainder of the season won't be dangerous to public health.

• **Cement Cement:** Free-Mix, made by General Material Co. (St. Louis), is a glue said to permanently bond new concrete to old. Claimed to be water soluble in the liquid state, the plastic adhesive dries to a permanent waterproof, acid-resistant bond.



Droop Spout

CROSS a tinsmith with an agricultural chemical maker, and you're likely to get an unusual result. But it's sometimes a worthwhile result—witness this modification of an ordinary sprinkling can, so that it better serves as a dispenser of the herbicide, sodium chlorate. Oldbury Electrochemical Co. worked out the modification, which involves soldering the nozzle on at a "droopy" angle, enlarging the sprinkler holes.

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NSE Motivation Chart II
Questions and question areas to be completed with each person to understand his motivational values

BASIC DESIRES	SECURITY	RECOGNITION	ACHIEVEMENT
<p>What state of your own mind... on the left side of the job.</p> <p>What state of mind do you have in the job?</p> <p>What state of mind do you have in the job?</p>	<p>What state of your own mind... on the right side of the job.</p> <p>What state of mind do you have in the job?</p> <p>What state of mind do you have in the job?</p>	<p>What state of your own mind... on the left side of the job.</p> <p>What state of mind do you have in the job?</p> <p>What state of mind do you have in the job?</p>	<p>What state of your own mind... on the right side of the job.</p> <p>What state of mind do you have in the job?</p> <p>What state of mind do you have in the job?</p>
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JOURNEY'S START: Motivation can spell the difference between a bulging order book and barren order blanks.

Motivation Analysis: Salesman Stimulator

When it comes to cooperating with other industries in establishing ways to step up salesmen's efficiency, the chemical segment is usually eager to do its share—and reap the joint rewards.

Chemical sales managers who are poring over the findings of the National Sales Executives', Inc.'s just-released study of salesman motivation can rest assured that the industry had a representative part. In fact, some of the largest chemical and chemical process firms made salesman available for interviewing.

The results of the three-year-long study are now being released in the form of three practical-to-use charts—basic motivations, interrogation procedure, interpretation. As such, they should help the supervisor in figuring out what makes his men tick and how to spur them on to more sales. Curiously enough, money isn't always the mover of all things.

It's long been recognized that moti-

vation of a salesman is extremely important. Away from close supervision, to a large extent a self-starter, and face-to-face with frustration in lost and delayed sales, the salesman has to have "something" to keep him going. Strong motivation is that something.

Several years ago, NSE set up a committee to tackle the problem of finding out what makes a salesman tick. Broadly, the committee had these goals:

- Determine just what motivates a salesman through "thick and thin."
- Collect a body of knowledge on sales motivation and collate it.
- Find out ways to obtain the maximum effort from each man.

After about a year of exploring motivation among members of Sales Executive Clubs, the committee obtained the views of many different social scientists (anthropologists, sociologists, psychologists, etc.). Even- tually, a rough draft of an interview

was tried in depth (2 hours to one day) on 40-50 subjects in many different firms (including some chemical firms). Gaps in the procedure were filled in, and just a few weeks ago NSE issued its motivation manual.

The \$15,000-\$20,000* study is divided into three parts:

Psychology: The first chart is intended to acquaint the interviewer with the fundamentals of motivation. "Basic Desires" are broken down to four groups—security, recognition, sense of belonging and response, and new experience and growth. The rest of the table then discusses how these desires are manifested in three different areas—life goals, status, and achievement symbolism.

Interviewing Formula: Following the same pattern as the first chart, this table provides a nucleus of questions for the interviewer to ask to determine

* Out-of-pocket expenses only. Counting the contributions of services and volunteers, the figure would be more.

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Clairton, Pennsylvania

(CW)

Please send me a copy of your bulletin describing Picco Products and samples of grade for (application)_____

Name _____ Position _____

Company _____

Address _____

AREAS TO BE COVERED:	(Write in the spaces below the questions you are going to ask during the interview.)	NOTES ON THE INTERVIEW (Jot down enough to aid your memory)
SECURITY (Read Definitions in Chart II) His goals — short-range and long-range? His "status"-striving? His symbols of success or failure?		
RECOGNITION (Read Definitions in Chart II) His goals — short-range and long-range? His "status"-striving? His symbols of success or failure?		
RESPONSE — BASIS OF BELONGING (Read Definitions in Chart II) His goals — short-		

INTERVIEW AID: Special form will help sales managers organize probe of a salesman's mind.

the salesman's drives. Although many questions are listed, NSE's psychologists recommend that the queries be paraphrased during the interview, rather than used verbatim. Too, information uncovered here will often lead to spontaneous and further revealing queries. A special interview blank has even been worked out to aid motivation probes (*see cut, above*).

Evaluation: The third chart delves into the interpretation of a salesman's motivation relative to the company and how the accumulated data can be applied to raise his efficiency. For example: a person resistant to change may accept new procedures if they are presented as "there is nothing new under the sun."

Before using the charts to give a motivation interview, the sales executive should first try them out himself or attend workshops on motivation. It's expected that many local NSE clubs will sponsor motivation workshops where experts on the procedure will show how motivation analysis is done. And, NSE will offer help to companies setting up their own motivation program.

To further refine the existent procedure, the organization is asking all companies using the forms to file

copies of results and experiences with them. These data will be studied and revisions, if necessary, made in the charts. The work already completed (and on which the charts are based) points to some interesting differences between industrial salesmen and consumer-goods vendors. Generally:

- Industrial salesmen tend to have more "long-rangeness" in their planning and goals than their retail counterparts.

- Industrial salesmen find enjoyment in solving a problem or improving a process. This is in contrast with the satisfaction consumer-goods salesmen get from just "moving the goods."

- Both types of salesmen, however, find security in themselves, rather than in the environment.

Naturally, NSE doesn't feel that its study is a panacea for motivating salesmen. Any subjective approach (as the study is) is liable to error. And it's possible that some factors of value may have been omitted. But it does seem that the charts are a promising beginning, and can offer a chemical sales manager aid in keeping force morale and sales at a high level.

Coming Into Commerce: Mona Industries, Inc. (Paterson, N.J.) is offering

a new line of fatty acid amine condensates tagged "Monamid 150 Series." The new condensates are claimed to have 50% more amide than those sold previously as 100% active.

- Sharples Chemicals Inc., a subsidiary of Pennsylvania Salt Mfg. Co., is now providing commercial quantities of thiophene. Thiophene can be halogenated, nitrated, alkylated, aminated, and condensed.

- **Failures To Success:** Commercial chemical development projects that didn't work will be up for consideration in a symposium at the meeting of the American Chemical Society in Minneapolis this fall. Symposium date: Sept. 13. Case histories of project failures, recommendations for pepping up dragging programs, finding the courage to quit, and game theory in development will be included in the agenda.

- **Cylinder Contamination:** Several instances of petroleum-solvent contamination of E-size nitrous oxide gas cylinders have recently been discovered, particularly in the Southwest. The Compressed Gas Assn., Inc., is currently warning cylinder owners to be alert for such misuse.



From the rocks of **Les Baux**

Back in 1821, Pierre Berthier of the French Royal Corps of Mines, according to legend, was strolling in the hills around the village of Les Baux (Bouches du Rhone), France. His companion stained her white dress with material from the surrounding rocks.

Upon learning the young lady was having difficulty removing the stain, Berthier collected samples of the rocks of Les Baux. When he analyzed the ore he found it contained 52.0% alumina, 27.6% ferric oxide, and 20.4% combined water. This was the first official recognition given to the deposit. Later, the ore was named "Bauxite" from its association with the near-by village of Les Baux.

Since this discovery, other deposits of bauxite have been found in several parts of the world. In addition to being the basic raw material of the world's aluminum industry today, bauxite is also an important raw material used by the chemical industry and for the production of abrasives, refractories and ceramics.

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PRIEST, GOLDWATER: Would broaden Wool Labeling Act to cover all fibers.

Definitions Loom for Synthetics

Preliminary talks on setting definitions for acrylic and polyester synthetic fibers are being held by fiber makers and the Federal Trade Commission.

And while such definitions are in the very earliest stages, they could eventually form the basis for FTC synthetic fiber industry trade practice rules—much like those that now cover the labeling of rayon and acetate. Such rules are set up under Section 5 of the FTC Act, which gives the commission authority to prevent deceptive advertising and labeling. Only fiber that presently has its own specific labeling law is wool.

First formal step in making and enforcing rules is still some time away—in all likelihood, at least a year. This step would be the calling of an industry trade practice conference, to which manufacturers, processors, consumers and others could suggest "fair practice" rules for the industry.

On the basis of these suggestions, and with the knowledge commission staffers have gained from their previous informal discussions, a tentative set of rules is published. These, then, are used as basis for a hearing before the full commission, following which a formal set of rules is made official. Deviation from such rules then would leave a company open to legal proceedings.

But before these many steps are taken, there's a chance they may be-

come superfluous. Bills were introduced last week by Sen. Barry Goldwater (R., Ariz.) and Rep. Percy Priest (D., Tenn.) that would, in effect, broaden the Wool Products Labeling Act into a "textile fiber products representation act," which would cover materials made of any natural or artificial fiber.

If such a bill were passed, FTC could establish generic definitions for every fiber, and enforce the labeling and advertising of any fabric according to its constituent fibers. There would be nothing to keep companies, however, from also using a "nondeceptive" trademark along with the generic name.

The bill was written by the National Retail Dry Goods Assn., with assistance of many groups in the textile industry and distribution field. Included: at least one synthetic fiber maker.

But passage may take time. Congress considered bills to regulate flammable fabrics for almost eight years before brushed rayon sweater incidents sparked Congressional action.

Meanwhile, FTC is going ahead on synthetic fibers, under present statutes.

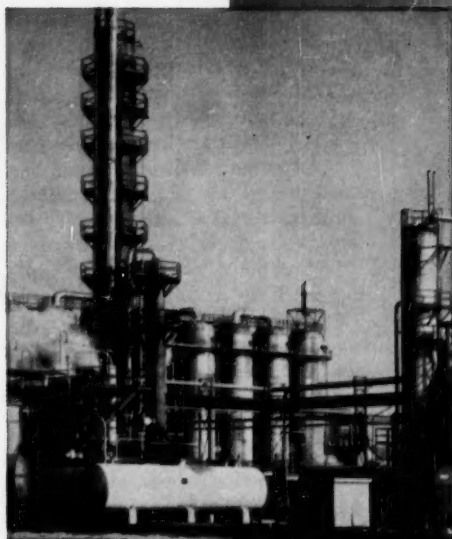
The primary objective of FTC in drawing up a definition, and a generic name, for a fiber is to draw it to include only fibers with close-to-identical performance characteristics. In this way, when a shopper sees fiber

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label, she knows—or will get to know—exactly what its qualities are.

The problems to be faced in drawing up such problems can be quite perplexing. One sure to come up: Should Union Carbide's dynel be considered an acrylic? It contains some 40% acrylonitrile, compared with the 80% and above of materials made by Du Pont, Chemstrand, and, experimentally, by Cyanamid and Eastman. Consequently, its melting point is lower, giving different optimum ironing temperatures. The use of 10% and more of methyl methacrylate in the Eastman test fibers has reportedly given similar lower melting point.

Another poser concerns fabric blends, where fabric construction may be as important as fiber content. Blends of, say, 45% wool and 55% polyester fiber may exhibit radically different performance characteristics, depending on the tightness of the weave, on the length of staple used to make yarns, its degree of twist, and similar factors.

The key is whether a label helps a consumer know what to expect on buying a particular type of fabric.

FTC officials are first to admit that the task is both tedious and time-consuming. And one of them, in looking ahead, wonders if attempting to define specific fibers is really worthwhile. "Maybe," he philosophizes, "we could just work up performance standards. Then, no matter whether fabrics are made of acetate; cotton, Orlon, wool or chicken feathers, if they have such-and-such characteristics, they can use an identical label."

For Tomorrow's Reference: Polyethylene—folder describes physical, electrical, film, permeability properties and suggests applications. Phillips Chemical Co. (Bartlesville, Okla.).

• Riboflavin retention—reprint of study on the effectiveness of various wrappings in the retention of riboflavin in commercial bread. Foster D. Snell, Inc. (New York).

Expanding Sales Coverage: American Cyanamid Co.'s Fine Chemicals Division is opening a branch office in Cincinnati, O., to improve service to pharmaceutical and veterinary customers in the East Central states.

• Du Pont is opening an office and warehouse in Philadelphia for its Automotive Refinishing Division.

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Color, Gardner (1933).....	15	7	7	7
Solidification Point, °C.....	-40	-41	-50	59
Specific Gravity @ 20/20°C.....	—	0.885	0.926	—
Specific Gravity @ 25/25°C.....	0.925	0.883	0.924	—
Wt. per US Gallon @ 68°F, lbs.....	7.71	7.37	7.72	—
Coefficient of Expansion, per 1°F.....	0.00067	0.00061	0.0043	—
Refractive Index, n _D @ 25°C.....	—	1.4631	1.4738	—
Viscosity:				
Saybolt Universal @ 100°F, sec.....	—	79.9	299	—
Centistokes @ 100°F.....	71*	14.5	62	—
Interfacial Tension Against Water, dynes/cm:				
0.1% solution in mineral oil.....	2	24.6	18.1	1.8
1% in m.s. against sat. ag. sol'n....	—	10.5	3.7	—
Surface Tension, sat. ag. sol'n, dynes/cm:	42	37.6	37.8	30.4
Flash Point, Cleveland Open Cup, °F....	400	325	395	None
Solubility, ml/100 ml:				
In Water.....	0.005	0.005	0.4	0.01
Water in product.....	—	3.8	2.56	—

* at 96°F

Now, Commercial Solvents offers three new surface-active agents that are closely related to ALKATERGE-C. Because of the latter's proven industrial usefulness, demand exceeds supply. Production facilities are being expanded and more will be available starting August 1955. Meanwhile, many of CSC's customers have found that ALKATERGE-A, -E, or -T do equally well or better in many of the jobs formerly accomplished by ALKATERGE-C. While they differ somewhat in individual properties, they should prove useful as auxiliary emulsification agents, antifoam agents, dispersing agents, spreading agents, pigment-grinding assistants, acid acceptors and in numerous other applications. Test all or any of these three new alkaterges for yourself. For complete information and a sample, write to Market Development Department, CSC, 260 Madison Ave., N.Y. 16, N.Y.

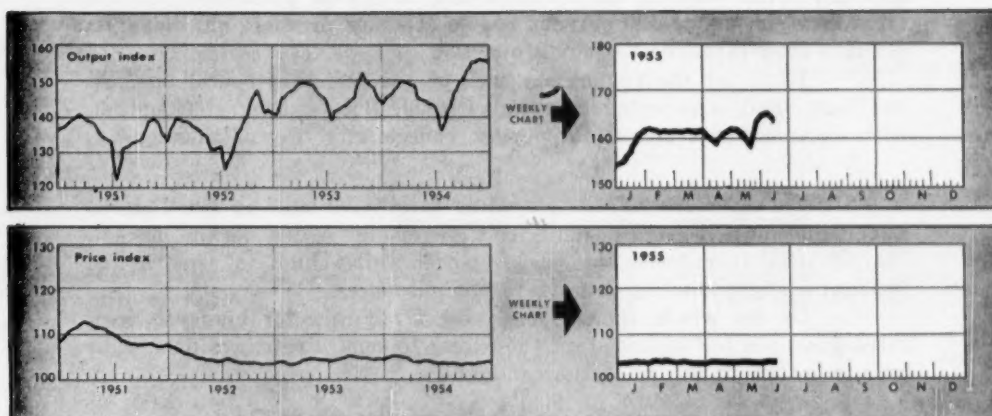
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WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-49=100)	162.9	163.7	143.8
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.2	104.3	104.2
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	445.3	440.3	300.4

MONTHLY INDICATORS—Trade (Million Dollars)

	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All manufacturing	\$26,092	\$25,976	\$23,681	\$43,268	\$43,332	\$44,495
Chemicals and allied products	1,914	1,902	1,624	2,953	2,982	2,939
Petroleum and coal products	2,273	2,341	2,151	2,674	2,667	2,733

MARKET LETTER

Naphthalene marketers are still moving material directly to consumers; in many instances they're by-passing their own stock-building to keep up with orders. Bulk of the latter, of course, comes from phthalic anhydride makers.

Phthalic demand, surprisingly enough, is maintaining a briskness that many observers had expected would peter out several weeks ago. Now, say some, it's anybody's guess when inquiries—especially from automobile and related industries—will actually slow.

As for imported hot-pressed naphthalene, the situation prevalent a couple of months ago hasn't changed to any great extent. Sellers are still trying for 7¢/lb. for what little 78° material is available, but customers are still resisting the higher quote. (The current working price, reportedly, is 6¾¢.)

Latest government figures point up the heartening naphthalene demand: During the first two months of this year, crude naphthalene imports totaled almost 16.5 million lbs.—a near-doubling of last year's 8.4 million lbs. during the same period.

In the aromatics market, benzol sellers also attribute much of the current high demand to automotive customers. But there's a steady call from most other users, too—e.g., synthetic phenol makers, styrene manufacturers, even dyestuffs.

There's some trade talk that prices may be in for a hike, but chances are that the continuing threat from low-cost foreign material

MARKET LETTER

hitting the U.S.—which, incidentally, early this year pressured domestic tags down 4¢/gal. to the current 36¢ level—may preclude any advance, perhaps even through the fourth quarter.

Basis for the rumor may well be the fact that benzol business has been (and is expected to remain) good. But bustling steel output, with its concurrent benzol outpouring, cancels any fear of shortages.

The same record steel operating rates have built up toluol stocks at certain points, though demand isn't low enough to wobble the market. Petro-toluene inventories, too, are reported fairly high in some areas. Reason: a slight slipping in government purchases.

On the whole, though, the present hot race for higher octane-rated gasolines has siphoned off the excess toluene. Prices are firm, with little indication of any alterations in sight.

DDT prices appear to have regained some firmness after the here-and-there deep slashing of a few weeks ago. Reason, of course, is that the long-awaited domestic rush is just getting started. Tags aren't up to the 27¢/lb. level yet, but odds are this quotation is in the works.

Exports, particularly on General Services Administration orders, have done much to keep the DDT picture somewhat in focus, but if insect threats in the South and West materialize, there may well be some farmers hard pressed for supplies before long.

The trend toward lower post-peak-season fertilizer prices is apparently extending from solid nitrogen forms to both anhydrous ammonia and ammoniating solutions. Newer quotes by some producers are effective on deliveries after July 1.

Solution buyers will pay about \$2/ton N less than before; anhydrous ammonia tags will be revised to set up an f.o.b. price of \$85/ton. The previous price, \$88/ton, was freight-equalized at competitive points.

Demand for direct-application materials is generally slower than it has been except in some areas.

Early this week Union Carbide and Carbon, through its Bakelite Division, startled the vinyl plastics industry with some hefty price cuts. Vinyl resin reductions ranged from 9% to as much as 18%. Greatest drop (from 38¢ to 31¢/lb.) is on the company's "nonsolvent" type (a 97-98% vinyl chloride copolymer of vinyl chloride-vinyl acetate) and certain of its 100% vinyl chloride polymers.

Other slashes: solvent resin types, 1 to 3¢/lb.; emulsion-polymerized vinyl chloride resins, 6 to 7¢/lb.

The competition hasn't yet had time to evaluate the changes, but there seems little doubt that the vinyl resin pioneer's lower prices will set the industry standard.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending June 27, 1955

UP

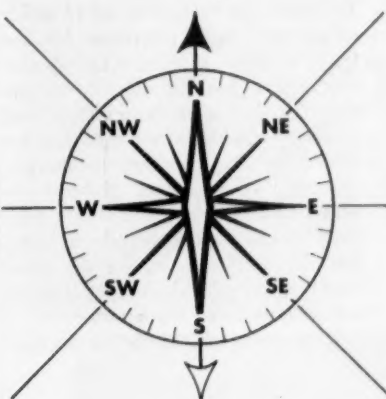
	Change	New Price		Change	New Price
Casein, imp., Argentine, acid-precip., grd., duty paid, c.l. ....	.0025	.2350	Dimethyl, tanks, dlvd., 100% basis	\$.3400	\$1.00
			Phenyl, dms., c.l., works	.0600	.7550
Ethanolamines:			Potassium permanganate, com'l, dms., works	.0100	.2350
Diethyl, dms., c.l., dlvd. ....	.0150	.6900	Tung Oil, tanks, N. Y. ....	.0012	.2350

All prices per pound unless quantity is stated

"... business generally very healthy, and it looks like a brisk market for balance of the year."

"... no gluts. Supply situation good for upcoming months; no shortages anticipated."

"... outlook in this area: business on the up side, but competition is definitely going to be more keen."



"... markets here reflect strong optimism for last half of this year, probably most of next."

"... East Coast chemical marketers very optimistic about '55 — and '56, too."

"... sales way ahead of last year and the potential seems greater than ever — 'hustle' is the word."

MIDYEAR REPORT: From all points, a busy hum of optimism.

Survey Sum-up: Bustling Business

North and South, East and West—all over the nation the chemical market compass points generally to clear sailing ahead. Here and there a few squalls (rough competition, price activity) appear to be brewing, but most top executives, sales managers, and purchasing agents are ready to buck such winds, plow profitably through the economic waters of the next six months.

A just-completed CW midyear survey reveals a near-similarity in marketplace conditions in various sections of the country. For example, supply/demand on most items is well balanced and stable, with but a few chemicals in the tight category. Price cutting and concessions are inevitable, but these practices may well be sporadic compared with '54's frenzied frequency.

Established profit margins may not show much expansion, but neither will they suffer too-painful squeezes—and conservative price adjustments will ease the latter.

In the main, though, in most areas the price structure of the chemical market is expected to remain fairly firm.

From coast to coast, here's the way market observers view the next six months:

WEST COAST

In the Far West, tenor of the current business climate registers this way:

- The market is more competitive. But price cutting is on the wane.
- Demand continues to keep up with supply on most items—may result in a few price hikes.

Perhaps the most significant comment heard, here as well as in practically every other section of the country: "There are no evidences of gluts on the market, and none are expected."

Firm prices and good supplies characterize most basic chemical items, including styrene, glycols, phosphates, aromatic and chlorinated solvents, fertilizers, and most acids. Ethyl alcohol, at least of late, has remained stable, although prices of other alcohols are still reported to be fluctuating.

West Coast buyers, say trade followers, may well look for price increases on caustic, soda ash, salt cake (sodium sulfate), and chlorine. Although this is the season of public sanitation demands for chlorine, price hike predictions are based on rising manufacturing costs and higher salt prices rather than a short supply. In contrast, glycerol and boric acids are in short supply, yet no price changes are anticipated.

The phenol market is improving and

prices are recovering; phenolic resin quotes are higher. Some vinyl items, too, are suffering a temporary shortage because of auto industry demands. Polyethylene, on the other hand, is abundant, and many are predicting an oversupply before the end of the year.

Consistent with a countrywide pattern, phthalic anhydride is very tight and will remain so except for a slight loosening during the summer months.

SOUTHWEST

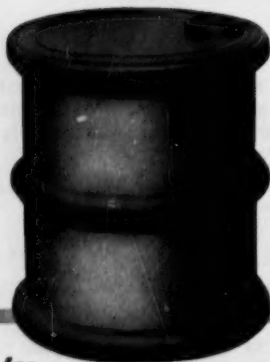
The land of sunshine and cactus promises to be free of both economic storms and thorny chemical marketing problems during the months ahead. Here, caustic and soda ash are to be found in the "supply adequate, price stable" list along with sulfur, acetone, most salts and acids.

Chlorine, because production has reportedly lagged behind consumption, is in the tight column along with methanol and ethylene glycol. Glycerol is chalking up a climbing demand-curve, and formaldehyde orders are straining production facilities. Meanwhile, seasonal patterns have lifted ammonia consumption on the one hand, depressed the use of hydrochloric acid on the other. Metallic sodium is currently a hard-to-sell item.

The insecticide market, too, is at

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MARKETS

ebb, but doesn't warrant a worry tag because the slump is seasonal and normal.

MIDWEST

To adjust the Southwest list of stable chemicals into a run-down for the busy Midwest market, take off acetone and add a few more items like phosphates, xylol, sodium sulfate, and resins. Similarities in the tight bracket shared by the two regions include chlorine, glycols, and glycerol, to which add chlorinated solvents, titanium dioxide, toluol, butadiene, acrylonitrile, and selenium for the Midwest picture. (The shortage of chlorine here is considered temporary.)

Excessive stocks of phenol are now

said to be easing because of gradually expanding consumption, and observers rate the sales outlook as fair. A surplus—though not of serious proportions—may develop in the acetone market.

Price fluctuations are foreseen for several items: for one, benzol. Competition from imports, specifically Canadian and German, also prompts rumors of probable price cuts for salt cake in this area—a direct contradiction of feeling on the Coast.

Finally, some buyers feel that the tight status of phthalic anhydride may be complicated further by price increases if the cost of naphthalene (a leading candidate for the critical sup-



Overhead and Underfoot

INTRIGUING, to say the least, is an expanding outlet for foamed styrene—as a structural material for walls, roofs and floors. Already being distributed in six states by The Emerson Co., the Dow-made Styrofoam is being pushed on a basis of a raft of advantages including durability, vermin resistance, high insulating value, lightweight.

Underscoring the latter boon: designer-builder Dean Emerson (*see cut*), easily holds 108 board ft. of the material (weight: approximately 20 lbs.). With a 1-in. coating of portland cement on each side, the Styrofoam will make a 5-in.-thick wall; cost, about 85¢/sq. ft., compares favorably with \$1.25 for a 4-in. brick veneer-and-insulation wall.

ply list) climbs because of wage increases in the industry.

SOUTHEAST

Swinging down to Dixie, the market tune sounds pretty much like a variation of the same familiar theme—competition keen, a balanced market, and feelings of optimism all around.

About the only off-beat note in the Southeast is a shortage in the sodium fluoride family—particularly silicofluoride. Buyers report that most producers of silicofluoride are not quoting prices now, and many claim to be sold out until well into the fall.

Pricewise, only muriatic acid is oscillating; there are broad hints that special concessions can be obtained for this item, though definite instances are hard to pinpoint.

NORTHEAST

Echoing most of the basic patterns noted throughout the rest of the country, Northeast chemical marketers add a few footnotes arising from their particular coign of vantage. Phenol is abundant, but no troublesome surplus is expected and prices will remain firm. At least one observer sees an absence of a polyethylene glut, too, and looks for a brisk season for the entire plastics and resins industry.

The nationwide shortage of phthalic anhydride continues despite a slight easing during the summer months, and some Eastern resellers may continue to earn their presently reported 2-5¢/lb. bonus over market prices. A close watch of the import-export ratio of phthalic is advisable because growing European needs may have significant effects on the domestic supply-demand picture.

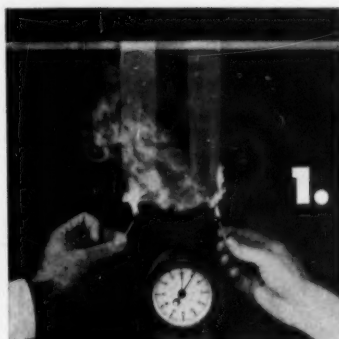
Polyisobutylene, some titanium pigments, nickel and its compounds, are reported short, while ammonia and ethyl alcohol are plentiful. Acetone continues to be jumpy because of oversupplies resulting from cumene production.

Sulfur buyers are looking for drops in prices as the impact of Mexican sulfur is felt. Seasonal spot shortages due to heavy runs on glycols for auto antifreeze will be alleviated in the future as new plants come in.

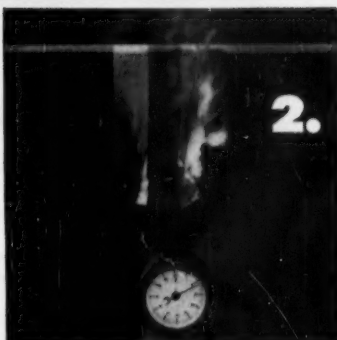
All in all, with the passing of the auto labor crisis, the nation's chemical market pulse is steady, and virtually all observers predict hearty health for the second half of '55.

Here is a FLAME RETARDER

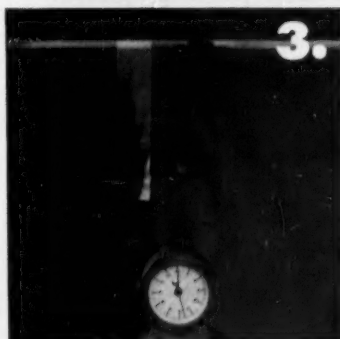
with **Low**
Tinctorial Strength



1. FLAME WAS APPLIED
to two vinyl plastic sheet samples of the same formulation, except that sample at left contained M & T Flame Retarder.



2. FIVE SECONDS AFTER
removal of matches, protected plastic had stopped burning, unprotected sample continued to burn fiercely.



3. AT THE END OF TEST,
unprotected sheet was reduced to black ash.

Here is proof that M & T Flame Retarder readily retards combustion when combined with organic, chlorine-containing compounds. Easily blended throughout the material it protects, M & T Flame Retarder has approximately one-fifth the tinctorial strength of Antimony Oxide, making it ideal for semi-transparent stocks. Considerable savings of expensive basic pigments can be made in processing deep colors.

For applications where low tinctorial strength is not required, M & T Plastic Grade Antimony Oxide is recommended.

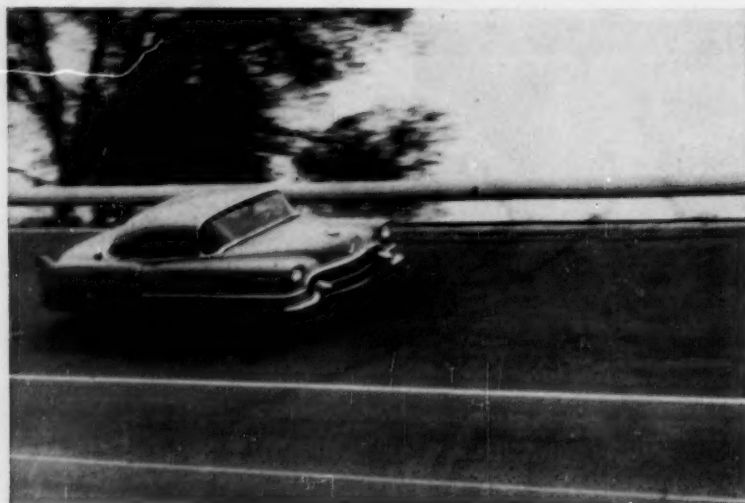
Both M & T Flame Retarder and Antimony Oxide are control graded to assure consistent results from batch to batch. Write for information on these products or call on M & T's research facilities available to help you with your flame-proofing and fire-retarding problems.



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Compression Sets Fast Pace

New high-compression auto engines are giving gasoline researchers a bushel of headaches. Most pressing: preignition and octane-robbing engine deposits.

Emerging from research are high-octane reforming processes, hopeful new gasoline additives and fundamental combustion knowledge to attack the problems at their core.

The race among auto makers to be the first out with an engine of 10-to-1 compression ratio caused audible rumblings of uneasiness at the recent World Petroleum Congress in Rome. That's because every jump in compression—and they have come with increasing regularity (*see box*)—means an intensification of problems that now have gasoline researchers staggering.

Directly, or otherwise, these problems are associated with the high anti-knock fuel requirements of modern high-compression engines. Dependent upon high-octane gasoline, the new power plants show an alarming talent for converting part of their fuel intake into octane-robbing deposits.

The task facing researchers: to develop high-octane gasolines that are impervious to preignition, spark-plug fouling and the other detrimental effects of engine deposits.

The first part of the job is progressing with dispatch; average octane of premium gasoline has reached a peak of about 95, two numbers above last

year's average. If the climb continues, as it is fully expected to, octane ratings should reach 98 by 1958 or '59, and 100 not long thereafter.

Alert to this probability, researchers for the past several years have been scrambling after new and improved catalytic processes of reforming naphthas—the only petroleum fraction that still offers much opportunity for octane improvement. Recent results of this activity are Universal Oil Products' Rexforming process and Houdry Process' Iso-Plus, both of which are

said to yield 100-octane gasoline.

And a \$3-million plant for producing 100-plus octane gasoline is reportedly planned by Utah Oil Refining Co. for completion next year.

Pressure Off: Noteworthy among process improvement studies is the recent work of Standard Oil Co. of Indiana on its Ultraforming process. A platinum-catalyst process (like most high-octane reforming methods), Ultraforming now reputedly can convert naphthas into high-octane fuel in substantially better yields (up to 9%) than formerly. Key: lower pressure—200 psi. compared with the old 500 psi.

According to Joseph Roberts, general manager of the Indiana company's research, each 1% increase in yield may be worth several hundred dollars/day for a 10,000-b./d. reformer.

Another potential method to cut costs hinges on the search for more precise laboratory methods of determining octane number. Humble Oil's M. R. Morrow recently reported that present single-test methods involve an estimated possible error of ± 0.4 octane number of a sample. To compensate for this uncertainty the refiner must include a safety factor in the form of a costly octane bonus.

Research aiming to improve knocking procedures is now under way by the American Society for Testing Materials.

The emergence of high-octane processes is not appreciably damaging the position of octane-booster tetraethyl lead. The 33-year-old TEL is still firmly on top, exceeding all other additives in consumption. Other metal-containing organics (e.g., dicyclopentadienyl iron, *CW*, Jan. 22, p. 54) crop up from time to time, but none has made the commercial grade as an octane booster.

At the Top and Still Climbing

The post-World War II period in automobile development has been marked by a frenetic preoccupation with power. A half-dozen years ago, the 100-hp. engine was still somewhat of a novelty; 1956 models, however, are expected to include

several 300-hp. jobs. Packard already offers a 275-hp. number. Tops in this year's compression ratios is 9 to 1 (although the average is 8 to 1); 1956 will probably see 9.5 to 1, while 10-to-1 ratios are probably around the corner.



DU PONT'S MIKITA: Seeks an answer in fuel blends.

Dual Role: TEL, on the other hand, is both a blessing and a curse. While it economically raises octane rating, it also contributes to the formation of cylinder deposits (lead chloride, bromide, sulfate, oxychloride, etc.) that tend to increase the engine's octane demand. One projected solution of this problem is behind efforts to find metal-free octane additives.

Ethyl Corp. researchers recently evaluated 104 aromatic amines as anti-knock agents, found N-nitrosodiphenylamine and 4-*sec*-butyl-o-phenylenediamine to be effective. Data indicate, however, that these materials will not be of much practical value under the severe operating conditions of new high-compression engines. But the search continues.

TEL is by no means the entire cause of engine-deposits. The relatively high combustion temperatures of new engines are sufficient, in themselves, to promote the formation of octane-sapping sediments from gasoline.

One way to counter the formation of deposits is to modify engine design. But this approach is widely believed to be of limited value; potentially more important are chemical approaches. The widespread belief is that careful control of fuel and lubricant composition, combined with judicious use of additives, can effectively minimize the injurious effects of deposits on the cylinder walls and piston face.

Accordingly, Esso Research and Engineering has done considerable work on pinpointing deposit-forming

components of fuels and oils. Among its findings is that removal of higher-boiling gasoline components decreases engine-deposit formation, keeps octane needs low.

Esso also points up the contribution of lubricating oils to engine sediments, prescribes the elimination of bright stock (high-molecular-weight materials) to offset this effect.

Another Angle: Attacking the problem from another angle, Du Pont investigators have evaluated the relative susceptibilities of fuels to preignition—a factor more important than knock in limiting the performance of modern engines, according to Joseph Mikita, director of Du Pont's petroleum laboratory. The implication of the Du Pont study is that preignition-resistant gasoline blends may be developed.

A more common attack on preignition—indeed, on the entire deposit problem—centers around the use of additives. These may be deposit modifiers like Shell's tricresyl phosphate, Ethyl's haloalkylphosphorus compound or Standard Oil of Ohio's boron derivative. Standard of Ohio, incidentally, was recently assigned U.S. Pat. 2,710,251 on motor fuel containing alkyl boronic acid; and 2,710,252 describing an ester of an alkanediol and an alkyl boronic acid as a fuel ingredient.

Silicon compounds have also been screened as deposit modifiers.

Another type of additive is the solvation agent, which, in theory, keeps the cylinder wall wet, thereby preventing the adherence of deposit-forming substances. The Texas Co.'s additive—generally conceded to be oxidized oil, although the company has never officially revealed its identity—is believed to exert this action.

A third class of additives encompass combustion catalysts that are intended to burn up carbonaceous deposits. These compounds include metallic oxides (e.g., those of chromium, iron, cobalt, manganese, nickel, molybdenum), organometallics (e.g., dicyclopentadienyl iron), and nonmetallics such as dimethylformamide. None of these has moved beyond the laboratory.

Enter Nitrogen: Research of a fundamental nature recently yielded potentially valuable new data on deposit problems. Sponsored by Gulf Research and Development, a trio of Mellon Institute workers found that nitrogen oxides form engine varnish with fuels,

particularly at low operating temperatures. The full significance of this discovery has yet to be fathomed.

But studies such as this emphasize the already-strong feeling that petroleum chemists offer the best hope of alleviating the headaches of high compression. And the stakes are big enough to guarantee no letup of effort; the gasoline market is expected to hit 50 billion gal. by 1960.

End of a Mystery

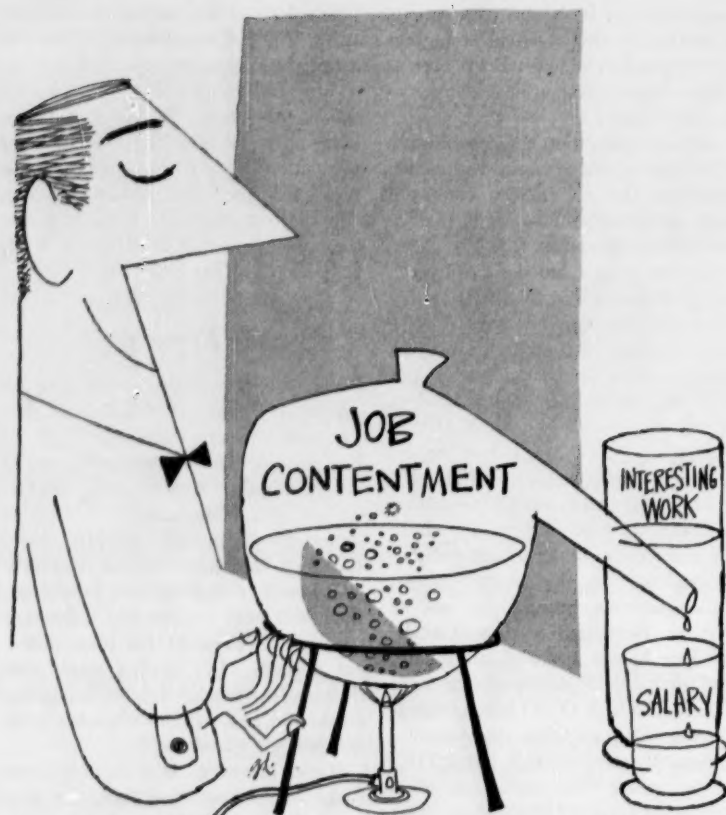
From the University of California (Berkeley) came word last week that longtime hormone researcher C. H. Li had completed his determination of the molecular structure of ACTH. Almost simultaneously a team of American Cyanamid chemists published its completed ACTH structure.

When Li's findings are published, they will help resolve the difference—if any—between ACTH from different animals. Li's studies were conducted on sheep; investigations by Cyanamid and Armour chemists both utilized hog glands.

This, however, is relatively academic. As a matter of fact, the new revelations add little to what was already known about the hormone's structure (*CW*, Nov. 20, '54, p.86). But they do underscore the fact that small fragments of the big molecule have high hormone activity, may point the way to a more precise approach to hormone synthesis and therapy.



UNIV. OF CALIF.'S LI: Finds an answer in sheep glands.



ATTITUDE BREAKDOWN: Money is important, but work counts more in . . .

How He Feels About the Job

If you don't pay good salaries, you are not going to get good researchers; and unless you provide challenging work and effective management, you aren't going to keep them. That's the not-unfamiliar lesson of the latest job-attitude studies conducted among industrial research people. What is surprising is that researchers are placing salary secondary to type of work and management in a breakdown of job-contentment factors.

That's the report of former Bureau of Labor Statistics staffer Theresa Shapiro, who described attitude-survey findings to the recent Columbia University industrial research conference (CW, June 18, p. 69).

"What stands out," she relates, "is the importance scientists attach to doing interesting work in a good working environment. Though the scientists were influenced by salary and opportunity for advancement in their job decision, they gave even greater

weight to the nature and conditions of their work.

"This was particularly true of scientists who had not changed jobs; less than a fifth (of the more than 400 surveyed) mentioned salary, promotions, or pension programs as a reason for staying put.

"Economic considerations played a greater role in the choice of a new job, accounting for almost a fourth of all the reasons cited, but here, too, the promise of interesting work was the leading consideration." It was only in the array of reasons for quitting a job that financial reasons equalled dissatisfaction with the work.

An explanation of this anomaly may be found in the recently reported work of Univ. of Chicago industrial relations researchers David Moore and Richard Renck.

The pair base their observations on attitude surveys conducted by the Industrial Relations Center of the Uni-

versity of Chicago. They find that research men tend to be career-oriented rather than company-oriented—i.e., they gain their greatest satisfaction from their work, feel that their future lies in their profession rather than their companies.

To the job-oriented person, aver Moore and Renck, recognition is important. "In general," they maintain, "he wants this recognition bestowed upon him for the merit of his work."

This springs from an analysis of the morale of different research groups: two groups showing high morale each had been successful in developing promising new products for their companies. "By the same token," point out Moore and Renck, "the most demoralized group we have surveyed is one which has failed to gain acceptance for their ideas."

Management's influence figures strongly in expressions of discontent by researchers:

"If we complete a project successfully, he (the research leader) claims the credit; if results are not obtained quickly enough, he disclaims responsibility and criticizes our . . . approach."

"Supervisory personnel appear to be too interested in protecting their jobs to allow certain types of investigations and thus discourage initiative and imagination . . ."

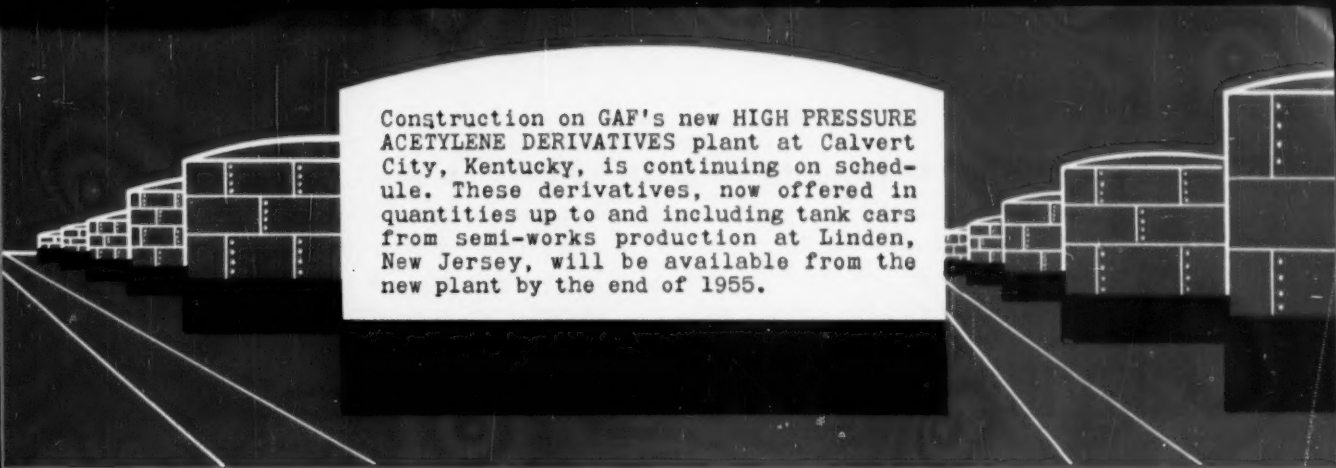
"I feel that my present immediate superior is not at all qualified to handle men. He maintains the attitude of having to be the first one to think of something . . . in order for it to be informative or useful."

"Supervision prefers to 'push' rather than lead and often forgets that even technical men are human."

"Too much of 'I am the boss and can do no wrong' and 'Do as I say; you're wrong.'"

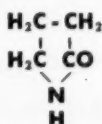
"No clear-cut plan laid down by management for future work . . . Insufficient explanation of raise system and pay bracket. Complaining does no apparent good."

How typical or how significant these attitudes are is open to debate. But one conclusion is clear: it requires very much more than a good salary to keep a good researcher content—and productive.



Construction on GAF's new HIGH PRESSURE ACETYLENE DERIVATIVES plant at Calvert City, Kentucky, is continuing on schedule. These derivatives, now offered in quantities up to and including tank cars from semi-works production at Linden, New Jersey, will be available from the new plant by the end of 1955.

Among the products to be made at the Calvert City plant are: **2-PYRROLIDONE** an organic solvent and chemical intermediate



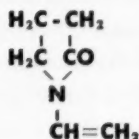
Colorless liquid m.p. 25°C, b.p. 245°C.
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From Research to Reality

Lagging Public Construction — A Spreading National Blight

The most recent editorial in this series dealt with the plans of American industry for expanding and modernizing its plant and equipment over the next four years. These plans call for the expenditure of \$113 billion over that period. There is a good prospect that the money to carry them out will be available. If the plans are carried out, manufacturing capacity at the end of 1958 will be double that which existed at the end of World War II. And this industrial plant will be modernized.

In sharp contrast to this picture is the condition of our *public* plant and equipment — the roads, schools, water supply, health and sanitation facilities upon which industry, as well as the average family, depends. According to a recent estimate by the Twentieth Century Fund, the people of the United States must spend almost \$100 billion on new public works projects during the next five years merely to meet the minimum needs of our growing economy.

Other estimates by the President's Council of Economic Advisers, by state agencies and by private construction economists all show the same condition: a staggering need for public works. Yet no steps have been taken that even offer a promise of closing the gap between the public facilities we are building and the greater facilities we really need.

How did we come to let our public facilities fall into this sorry state? Here are some of the reasons:

(1) During the years of depression and war, from 1930 to 1945, these facilities were neglected. New construction declined, and even maintenance was cut.

(2) Since the end of World War II, increased construction costs have made it difficult for communities to get the needed construction with the funds budgeted in the past for that purpose.

(3) The great postwar upsurge in population, and the spreading of our population into new areas, has created a huge demand for additional community facilities before the neglect of earlier years could be made up.

Responsibility Divided

Now the need for more public construction has become apparent to everyone, on jammed highways and in over-crowded schools. But, unfortunately, the responsibility for doing something about this situation cannot be so clearly fixed as can the responsibility for maintaining industrial facilities. A business firm must expand its capacity when markets are growing or lose its trade position. It must modernize its plant and equipment or be undersold by more efficient competitors. In the case of public facil-

ities, there is no such competitive incentive. To be sure, a city or state may lose population and industries if its public facilities are inadequate. But such shifts are very slow to take place and difficult to relate to any specific public program, or lack of it.

Moreover, the responsibility for constructing public facilities is divided between state and local governments and federal authorities. Within each of these governmental units there are specialized bureaus or departments with varying responsibilities. This division of responsibility obviously adds an element of difficulty to the development of an adequate program of public construction.

Breaking the Log-Jam

How can this administrative log-jam be broken and the financial difficulties overcome?

One course would be to have the federal government step in with a nation-wide new program of direct spending on public works. That would utilize the resources of the federal treasury for immediate action. But there are weighty objections to such extensive federal participation. One is that federal spending cannot be greatly enlarged without a corresponding increase in the federal control of decisions that normally have been left to local communities. Another objection is based on the fact that so long as we must maintain a large defense establishment, such an addition to federal spending means either higher taxes or a chronically unbalanced budget.

The other course is to rely primarily on local initiative, but with new and more effective federal aid to local governments. Such aid would help speed up planning and construction, and contribute toward a solution of the most burdensome financing problems, but in amounts sufficiently limited to require that most of the capital be raised locally.

No Single Formula

No one formula can be applied to make such aid effective. The raising of funds for new schools, for example, involves problems very

different from those of financing highways, or water-works, or hospitals. But it does seem clear that, in all these fields, the federal grants must be designed to stimulate more local planning and financing than has prevailed in the past. Among the new ideas that may offer such incentives are federal grants for planning and initial costs and federal guarantees of local bond issues. Such aids have been remarkably effective in the fields of slum clearance and public housing.

While the federal government clearly has a role to play, we cannot afford to postpone inauguration of an adequate public construction program while we seek a formula to apportion governmental participation that would be generally accepted as ideal. Every year about 2½ million more Americans are putting increasing pressure on a public plant already dilapidated and inadequate. The result is an increasing menace to comfort, health, education and safety. It is also an increasing menace to the effective performance of American industry.

The appropriate public response to this situation is a driving public determination to eliminate this increasingly dangerous lag in public construction. At this juncture, the development of such a determination is basic. Nothing stands in the way of an adequate program of public construction that a determined electorate cannot remove.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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RESEARCH

Tough Skin: Norton Co. (Worcester, Mass.) is launching a new line of refractory spray coatings. Comprising alumina, zirconia, zircon and silicon carbide, the series is a result of research sparked by the needs of jet and rocket propulsion systems. The first three member—tagged Rokide A, Z and ZS, respectively—are intended for application to metals, reportedly protect against temperatures of 3000 F and severe erosion conditions. The last-named is formed in place on graphite surfaces, imparts a high degree of hardness and oxidation resistance. Norton is offering nonexclusive licenses on the processes.

Easy Oxygen: A direct-reading dissolved-oxygen analyzer is now offered by Dorder Co. (Chicago). Claimed to be as simple to use as a pH meter, the instrument relies on a rotating platinum electrode and an electronic system that automatically translates diffusion current into dissolved-oxygen concentration. Dissolved iron, calcium, magnesium, sulfides, nitrites and organic matter reportedly do not interfere with the instrument's effectiveness.

Work Saver: National Bureau of Standards has developed a statistical method of reducing the effect of systematic experimental errors without increasing the required number of measurements. Known as generalized chain blocks, the NBS statistical designs are said to require no more than two measurements for every experimental condition. According to the bureau, the system has proved useful in studies of tire performance, synthetic rubber compounding, and analytical procedures. More information is contained in NBS technical report No. 1934.

Bio Boon: A new use for carbobenzoxy chloride in the synthesis of phospholipids is behind the material's recent price reduction (from \$15 to \$10/100 grams). A biochemical research tool, the compound is widely used in peptide synthesis. Mann Research Laboratories (New York) has just upped production in response to increased research demands.

For Better Tests: A special research committee of the American Assn. of Textile Chemists and Colorists has

been established to correlate test methods with actual performance, and to promote new tests to predict end use performance. Known as the committee on end use performance tests, the group will begin by investigating wear tests used in industry.

Available: Chemical Rubber Co.'s catalog of laboratory supplies and equipment is now available. It's called catalog A-L, contains almost 1,000 pages, may be obtained by a letterhead request to Chemical Rubber Co. (Cleveland).

Two New: A couple of research groups have been created in American Cyanamid's Bound Brook research laboratories: an intermediates group will conduct studies of aromatic intermediates, work closely with the company's new product development laboratory; a special chemicals group will take over miscellaneous research not now in the hands of other groups.

Toxicant Blueprint: Combined studies by the University of Maryland and National Research Council shed more light on the influence of structure on fungistatic activity in bisphenols. A screening of 24 bisphenols showed that the most effective possessed two chlorine atoms *para* to the hydroxyl group. Deviations from this arrangement—e.g., esterification, salt formation, etc.—diminish potency. Most effective compound studied comprised two *p*-chlorophenol structures joined in the 2,2'-positions by a trichloroethylidene bridge.

Debut: Emery Industries (Cincinnati) recently commissioned its Ernest Twitchell Memorial Laboratories. Named for the company's first research chemist, the research center is a three-story, L-shaped building containing 28 individual labs, 30,000 sq. ft. of floor space.

Ulcer Aids: Two new antacids for the treatment of gastrointestinal ulcers have been discovered at Philadelphia College of Pharmacy and Science. They are dihydroxy aluminum sodium carbonate and dihydroxy aluminum aminoacetate, the most effective members of a large group of materials tested in the ulcer study.

The school's research in this field is continuing.



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CHEMITHON'S Richard (left) and Burton Brooks discuss plans for . . .

Syndets Go

Though synthetic detergent manufacturers aren't in any rush to scrap their batch oleum sulfonation plants, several are eyeing new continuous processes with keen interest. Oronite Chemical Co. (San Francisco), for one, is currently investigating the continuous alkane sulfonation employed in Chemithon Corp.'s (Seattle, Wash.) recently completed pilot slurry plant (CW Newsletter, June 25). And Girdler Co. (Louisville, Ky.) is just finishing an installation of its Votator equipment in a semicommercial plant that's scheduled for expansion to full-scale operation later this year.

Chief advantage of the continuous sulfonation processes is the small size of equipment required to turn out a given capacity. The reactions are not difficult to carry out, although they call for careful control of temperature. Too, conventional batch sulfonation requires oversized equipment and long cycle times to remove the large quantities of heat resulting from a highly exothermic reaction.

To beat the heat dissipation problem, Chemithon developed rapid mixing equipment to minimize contact time between alkane and sulfuric acid. Though the total heat to be removed remains the same, short contact time permits the system to operate at higher temperatures without product discoloration.

Chemithon's process cut cycle time for sulfonation, digestion, neutralization, dilution, and settling from 10-13 hours (normal in batch operation) to 13 minutes. Of this total, 8 minutes are required for reaction, 5 for separation.

Low Cost: Another advantage of continuous sulfonation is the relatively low initial investment for a commercial plant. Chemithon spent about \$10,000 on equipment for its 2-million-lb./year pilot plant, figures the unit represents an investment of about \$25,000. This is a considerable savings over the \$60,000-75,000 required for a comparable packaged batch slurry plant.

Compact equipment minimizes space requirements—pilot unit would fit in a standard living room—and provides considerable design flexi-



Chemithon Corp. was formally organized just last year by two brothers, Richard and Burton Brooks and Kenneth Graves, of the Kenning Equipment Co., a Seattle metal-working firm. But the original idea behind the company goes back about three years, when seven Seattle engineers started looking for a chemical to make — something that was consumed but not produced in the Pacific Northwest.

After some sifting, they hit on synthetic detergents for industry as a likely field to enter. But they soon discovered that the market—estimated at some 2-3 million lbs./

year—didn't warrant the expenditure of the \$60,000-75,000 that a conventional packaged slurry plant would require. Furthermore, drying equipment for the production of powdered materials for the household market would cost at least another \$100,000. So the engineers started looking for a new method and simple, inexpensive equipment to produce sulfonates.

Chemithon spent several months working with Oronite, came up with a new continuous process that can be used to sulfonate other products as well as common detergent raw materials. Richard Brooks, who also does consulting work in the field of synthetic detergents and oils, has used the process in some studies conducted for a local fish-oil company.

But Chemithon feels that its future lies with the soapers, is mainly interested in licensing and designing plants (on a royalty-per-pound basis) in other sections of the country.

Continuous

bility. Installation of more heat exchangers is essentially all that's needed to increase plant capacity. Too, the continuous process is more readily adaptable to automatic control, gives the operator greater flexibility in the selection of acid concentration, alkane to acid ratio, and rate of acid addition.

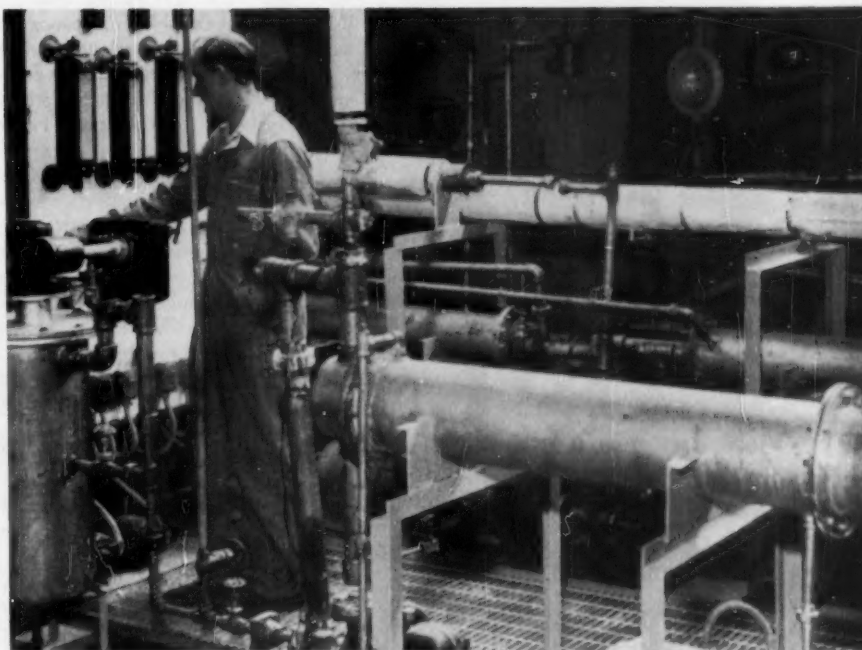
The equipment, constructed mainly of stainless steel, is of conventional design, except the modified centrifugal pump in which alkane and sulfuric are mixed. It's this pump modification that's the key to the process. The company, however, isn't ready to discuss that, except to say it's based on a simple idea.

Quality Product: In addition to substantial savings on capital costs and—in larger units—reduced labor, Chemithon claims its process turns out a higher-quality product. Detergent produced by the pilot installation has better color, lower oil content (0.3-0.4% on a 100% basis) than most batch plant products.

Another departure from conventional practice is the company's plan to produce and market its product as a slurry rather than in dried form. It's common for big consumers to buy slurry for their own blending and drying operations. But smaller users are more accustomed to buying dried material. Whether or not the established preference for dried detergents will be a stumbling block remains to be seen. But Chemithon feels that, in the industrial field at least, the sales possibilities of slurry—at about 25% less cost to the consumer—have hardly been tapped. Says Richard Brooks: "Just let me talk to them and I'll convince them."

The company's immediate plans are to produce industrial detergent slurries for use in the Pacific Northwest area as air entraining agents in concrete, froth flotation agents in pea canneries, and line cleaning materials in commercial dairies. Future plans include licensing its continuous sulfonation process and building plants for detergent producers in other areas.

Reaction Control: Precise regulation of mixing conditions and reaction temperature is also the goal of Gird-



... the company's continuous sulfonation process now piloting in Seattle.

ler's Votator system of continuous sulfonation. But unlike turbine or centrifugal pump mixers, which require separate heat exchangers, the Votator combines mixing and cooling in one unit. No newcomer to batch oleum competition, it's been a key component of at least nine pilot plants devoted to the development of continuous processes.

Midway point between one of these pilot operations and a full-scale installation is the 500-lb./hour semicommercial plant that Girdler engineered for a major Midwestern producer. Its purpose: to determine optimum operating conditions for continuous sulfonation, both with oleum and with stabilized sulfur trioxide.

Final design and construction later this year of larger facilities (to about 5,000 lb./hour capacity) will depend, for the most part, on the success of the semicommercial operation.

The Votator system offers considerable flexibility in process cycle time, can complete sulfonation in 3-5 seconds. But too-rapid operation becomes hypercritical, says Girdler, and longer cycle (e.g., 20-50-second sulfonation, 40-minute digestion) is generally more satisfactory.

Though the company believes that this equipment will be used in this country chiefly as a substitute for separate mixing and cooling components, it expects to make complete packaged plants available for foreign producers.

The Votator's ability to control sulfonation reactions using sulfur trioxide, as well as oleum, opens the door to continuous processing of specialty detergents, too. For while sulfur trioxide is trickier to handle, it offers several special advantages: mole-per-mole reaction leaves no excess acid to be neutralized; high-purity, salt-free product is obtained without expensive refining; sulfonates can be readily neutralized to triethanolamine salts or other special salts as required. And it works on many organics, such as mercaptans and fatty alcohols, which the oleum process can't handle.

Some manufacturers, like Ninol Laboratories (Chicago) and Treprow Products, Inc. (Paterson, N. J.), feel that batch sulfur trioxide processes are quite adequate for making specialty products. But it's a good bet that both of the new continuous sulfonation systems will be closely watched by all who plan ventures in detergents.

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PRODUCTION

Dry Coat for Paper

If you run into problems because it's wet, then try it dry. That's the simple idea behind the new electrostatic coating process developed by Battelle Memorial Institute for Bergstrom Paper Co. (Neenah, Wis.).

The new process, according to Battelle's R. B. Reif*, eliminates all problems resulting from paper wetting in conventional systems. Pilot plant studies made thus far, together with cost projections indicate that it compares favorably with other processes from an economic standpoint.

But the big feature, says Reif, is its adaptability to different types of coatings in a variety of colors. Also, no water or solvents are necessary and a relatively high pigment deposition can be obtained. Clean-up and maintenance of the coating unit are simple, he adds.

Like a Precipitator: In principle, the Bergstrom process works like an electrostatic precipitator: the coating material is charged electrically and deposited on the paper web with strong electrostatic fields.

In practice, of course, the technique is a little more difficult to carry out. The coating material is ground—preferably to an average of between 5 and 10 microns. (The material itself

usually consists of pigments and a heat-sensitive binder).

The resulting powder is fed into a circulation system where it passes through a blower, agglomerates and becomes suspended in the air stream. From there it goes into the coating chamber, where it passes through a curtain of ions which charges it to one polarity. Part of the powder is deposited immediately, the rest passes into a large electrostatic field between large parallel electrodes where the electric field drives it against the web of paper. Some of the particles, which are not charged sufficiently to be deposited, return to the blower and are recycled. The deposited coat is fixed to the paper with heat.

Because the binder is usually resinous in character, coatings applied by the Bergstrom process are plastic. A variety of colors can be applied by mixing commercial colored pigments with the binder materials. It's not necessary to use pigments, however; plastic films can be made by the process. Moreover, it can be used to coat paper with mica, flock, or metallic pigment, and to make carbon paper and waxed paper.

Process Import

Artur G. McKee & Co. (Cleveland) has always had a formidable reputation in the petroleum and iron and steel industries as an engineer and designer. Lately, it's been itching to get into the chemical picture, too; but aside from a urea plant (for Standard of Ohio) it hasn't had too much success in courting contracts. Now, however, it feels it has found the key: an arrangement with Uhde Corp. of New York whereby it gets exclusive use of the German Uhde's highly respected processes in the chemical and petrochemical fields.

Up to now McKee, when bidding on a chemical plant job, very often would have to base its bids on processes owned by other parties, then go out after licenses to fulfill the bids.

Says Myran Livingston, vice-president in charge of McKee's petroleum division: "McKee has never been solidly established in the chemical plant construction field and has never had any processes of its own to offer. For us to enter the field, we would

*Who unveiled the process at the recent Sixth Coating Conference of the Technical Assn. of the Pulp and Paper Industry in Cleveland.



BATTELLE'S REIF: When water causes trouble, keep it out.

.....

have had to build or establish a complete chemical plant division from the ground up. That would have meant money, men and our own processes. But this way we're right smack into the business at a modest cost—with a company that has a worldwide reputation."

Works Both Ways: The transaction, of course, isn't one-sided in favor of McKee. For Uhde stands to gain, too. It has never had much of a marketing setup in this country. The "modest" royalties paid by McKee will probably be considerably more than it could get in this country by going it alone.

Actually, the processes involved in the deal cover a fairly wide range of organics and inorganics, including ammonia, carbon bisulfide, formaldehyde, methanol, calcium cyanamide, magnesium metal, polystyrene and sulfur recovery.

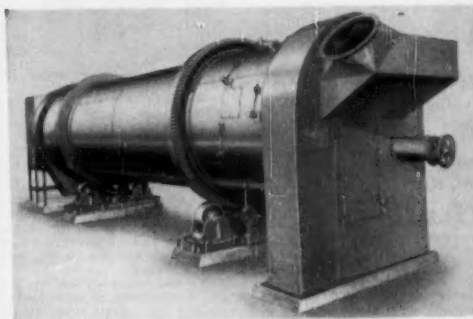
According to Livingston, possession of the processes by McKee will not mean any significant change in the price McKee can set on its bids. As he sees it, the same amount of time and effort will be involved and the final price will not be significantly different. He adds that there's a possibility of offering a customer in some cases equipment fabricated by German Uhde. Says he: "In those cases, there would be some savings, but although wages in Germany are continuing at a low level, material prices are rising and this is slowly rubbing out the price differential. Once German equipment was 10-20% cheaper than corresponding items here. But that differential has narrowed appreciably."

Already, he adds, McKee is negotiating a number of new contracts based on the newly acquired processes, but none has been signed as yet and the firm is understandably not ready to talk about them.

Right in the Middle: McKee's move into the chemical field isn't an isolated instance by a long shot. Increasingly, firms entrenched as contractors in closely related fields—particularly petroleum—are showing an interest in chemicals. Kellogg and Lummus, to name just two, have noticeably stepped up their efforts in the chemical industry.

Nor has McKee been the only one to realize the advantages of obtaining European processes and licensing them here. Lummus, for example, has im-

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PRODUCTION

ported a bevy of foreign processes
it hopes to use here.

For the chemical industry, of
course, it's a case of the more the
merrier. By such arrangements, it not
only gets the benefit of processes from
other countries, but it stands to gain
from sound engineering experience in
other fields, too.

PROCESSES

Hot Chlorination: Metal Chlorides
Corp. (Middleport, N.Y.) has just
completed one year's construction and
testing on its new ultra-high-tempera-
ture chlorinating furnace. Built to han-
dle chlorinations up to 4000 F, it has
operated at temperatures well over
that, says Mark Richelsen, president.

The furnace under test was a small-
sized commercial model. The firm is



Atomic Camera

MANY DELEGATES to the
fourth World Petroleum Con-
gress investigated the porta-
bility of a new atomic X-ray
camera displayed there for the
first time by M. W. Kellogg Co.
(New York). The small model,
being hefted by Wm. E. Hand-
ford (above), weighs 50 lbs.,
costs about \$2,000, uses cobalt-
60 isotope as a source of X-ray
radiation.

preparing to build furnaces with four times the capacity of the present one.

Ammonia: Koppers Co., Inc. (Pittsburgh, Pa.) last week obtained North American rights to design, construct and license plants to use the L'Azote ammonia process developed in Belgium. According to Henry Denny, vice-president of the Engineering and Construction Division, the L'Azote process is characterized by low cost, high efficiencies and heat economy.

The process covers only the reaction of hydrogen and nitrogen to make ammonia, is therefore adaptable to any source of hydrogen—coke-oven gas, refinery gas or natural gas. However, Koppers is evidencing a decided interest in the process for use in con-

junction with coke-oven gas. It estimates that there's enough hydrogen present therein to produce 11 million tons/year of ammonia.

Although coke-oven gas has been widely used in Europe as a source of hydrogen for ammonia, it's only lately attracting attention here (CW, Dec. 4, '54, p. 50). After the benzene and ammonia have been removed, the gas contains as much as 50% hydrogen. This can be separated out by low-temperature fractionation. Or, like natural gas, it can be reformed with steam or partly oxidized with oxygen to form synthesis gas.

Tall Oil: Armour and Co. has granted licenses for processes in the field of tall oil fractional distillation to New-

port Industries, Union Bag and Paper and Hercules Powder Co., thus bringing the total number of licensees to five in this country. The processes are being used by Armour at its McCook (Ill.) plant. Presumably, Hercules will use them in its planned plant at Franklin, Va.; and Newport at its Bay Minette, Ala., installation.

Sea Water Desalting: The Army Engineers report on sea water desalting has been released to industry by the Office of Technical Services (PB 111569, Water Treatment, Prevention of Scale in Sea Water Distillation). It describes the thermocompression distillation system, says that it's cheaper than multiple-effect distillation where cheap fuel is available.

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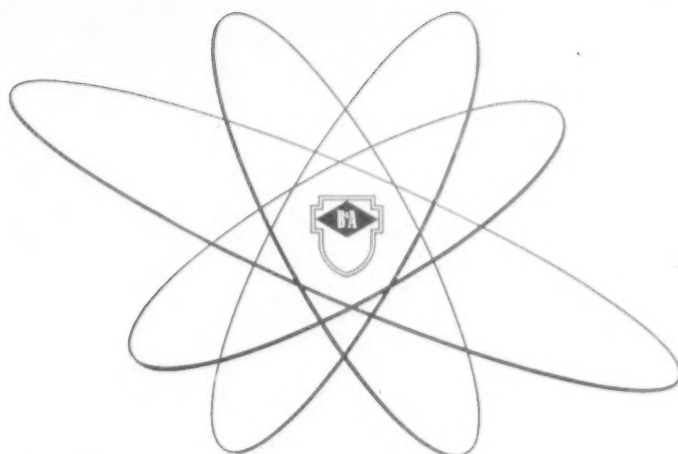
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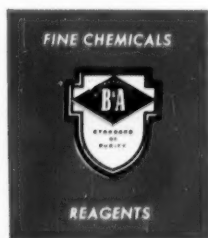
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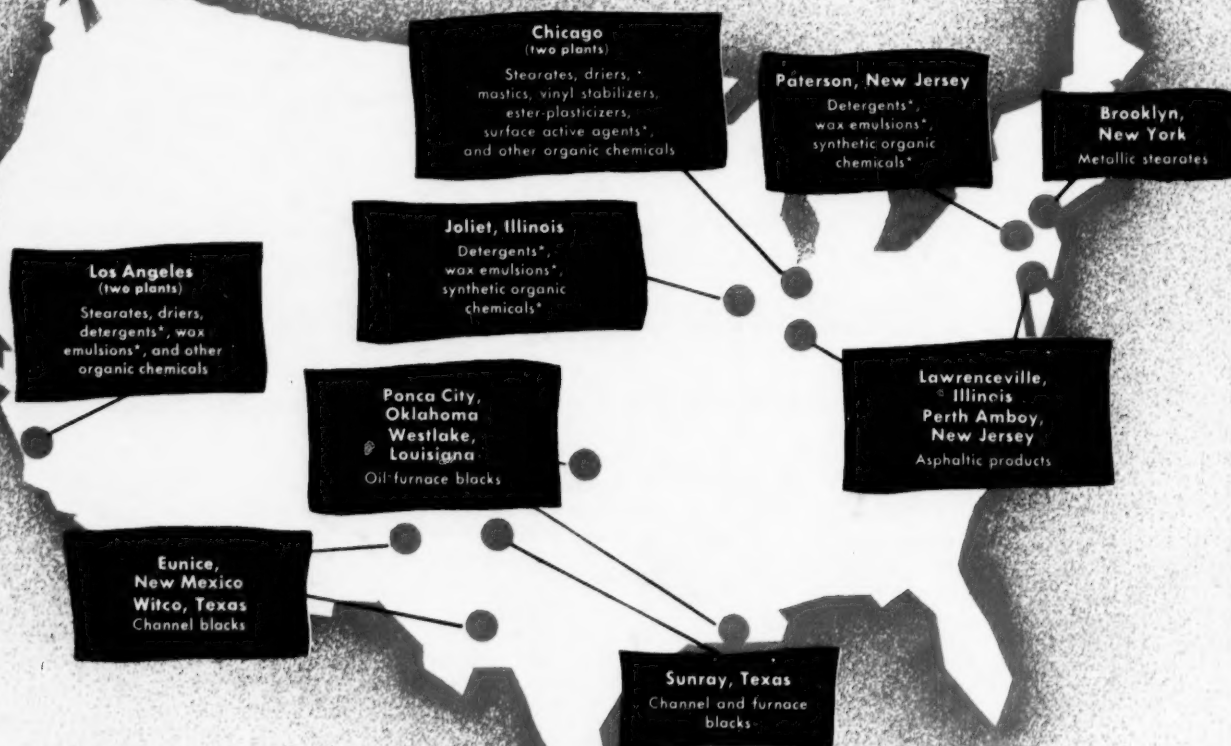
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